The Builder.

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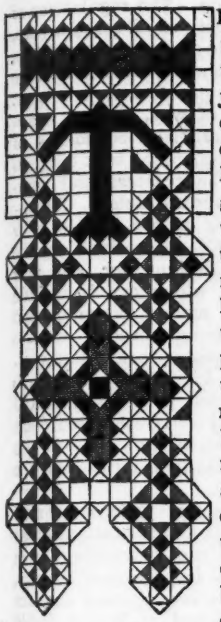
*The Properties of Iron and its Applicability to Building Purposes.**



THE study of metallurgy is essential to the architect who desires to do justice to the interests of his clients. None of the mechanical arts have shown such progress of late years as the manufacture of metals. In the working of iron the improvements have been so great, that within the past ten years processes which before that time had been pronounced impossible have been practically demonstrated as easy of achievement, and the qualities of this invaluable metal have not only greatly improved, but the mysteries of its organization and inner nature are daily becoming more clearly revealed. Castings in soft steel can now be made in contradiction of all past assertions, whilst the simple but most marvellous discovery by Mr. Saxby of the application of magnetic tests as a means of discovering unsuspected flaws in manufactured iron, promises to add a most important safeguard to the use of a material which is now so largely increasing. The Bessemer process of the conversion of iron ore into steel by a comparatively cheap and reliable process has, it is well known, introduced a new element into the manufacture of this metal, whilst the costly and long-continued experiments of Government have given to the world facts which engineers and practical men have not been slow to take advantage of.

The result is that we have now a supply of iron equal in its qualities to all the demands that the nature of its use may make upon it. The iron of the heavy armour-plating of our ships of war; the metal of our guns; the material of which girders and columns, railway tyres and rails, are made; and the iron of domestic use and for cutlery, hardware, and the like, have all their one common origin, and yet differ so much in their qualities, that very little observation is needed to admit that the treatment by which results so opposed can be gained from the same basis must be one of great practical difficulty, and requiring thorough scientific knowledge. Workers of iron will tell you that every day convinces them there is something more to learn, and enormous as has been the stride made in the past few years, each onward step only shows that the resources of art are illimitable, and the value of the metal so freely and abundantly given to man becomes the more appreciated, as its qualities develope.

There is at present a warm controversy on the respective merits of iron and steel for mechanical purposes; but, perhaps, the true and simple view of the question may be found in the opinion of Mr. Zerah Colburn: "Steel," says he, "is only iron in its best and most valuable form." Steel is, in fact, no more a different material from iron, than are wrought-iron or cast-iron from each other. The time may come when the distinctive name of "steel" will be disused altogether, and the generic name iron, with some mineral or other distinctive prefix to mark its special quality, will express better what is meant.

The study of metallurgy will be seen to have especial interest for all engaged in the practical application of scientific researches. The engineer and the architect employ metals largely in the construction of their works, and as a conscientious practitioner would scarcely content himself with accepting the dicta of those employed in carrying out his designs as to the description and dimensions of the materials he may seek to use, but would wish to satisfy himself on so important a matter, a careful study of treatises on metallurgy becomes essential.

Our own iron-masters are a different race of men to what the last century produced; the immense improvements made by science in the treatment of metals has compelled an amount of study and patient experiment which none but enthusiastic, unprejudiced minds would find congenial. We in England may be proud of some of our enormous iron-works, and of the laborious processes so continually carried on therein, but we must not blind ourselves to what is going on abroad. The iron trade at home has had a blow, whilst within the past twelve years the same branch of industry in France has made an astounding commercial progress. We believe that a careful analysis of the causes of the seeming stagnation in our own trade, and the increase of that of the Continent, will show no real cause for alarm, and for reasons that may presently be seen. This popular belief, however, is widely spread, and there seem grounds for such belief in the indications that meet the public eye. There are genuine French locomotives to be seen running on our English lines,—as a few years ago there were American; and what is more, encouraging by their performance those who imported them. Krupp's tyres are required by English engineers to be used by their specifications, when the very best Bessemer steel can be obtained at half their price in this country. French and Belgian iron are largely bought by our merchants and shipbuilders, and Belgian shipwrights are getting contracts from English firms, and are expanding their works with English capital; whilst on the other side of the picture are seen our men "on strike," and hundreds of our furnaces silent and cold. To strengthen this alarm, came the Paris Exhibition, the display in which acted upon all superficial observers to the prejudice of this country. But, why we consider there is no real cause of alarm, and believe that accurate statistics of our iron trade at home will show no diminution, is that, in fact, the whole system of iron-working has, within the period alluded to, undergone an entire revolution. This seems the simple explanation of it all, and this important revolution has been brought about by the introduction of the Bessemer process, and by consequent demand for hematite or spathic ore.

The result, then, is this: heretofore the great necessity of iron-working has been *coal;* and those localities which best supplied the fuel have been in the most flourishing state. The old centres of the iron trade were, therefore, naturally placed in such localities where coal-fields abounded in the purest fuel: hence Yorkshire, Staffordshire, and Wales were in the foremost ranks. Moreover, it was well known that the quality of the iron manufactured depended almost entirely on its working; that is, on the amount of fuel burnt in producing and re-working it. In fact, quality of ore was secondary to abundance of coal in the old days of the puddling-furnace. But the introduction of the Bessemer invention has changed all this. The metal resulting from this process depends entirely upon the purity of the *ore* employed, and as the consumption of coal is not only enormously lessened, but, by the application of the invention known as Siemen's gas furnace, coal of inferior quality may be partially used, the choice of a locality for conducting the working of iron with adequate economy and success is dependent now on its supply of pure *ore*, not upon that of coal. Now we know how tardy we good folks of England are to adopt largely any new thing however good, and the simple state of the present question is, that new ironworks are slowly being established in new districts more locally favourable for carrying on the requirements of the new process, and the old furnaces are becoming disused. Again, observance of facts shows that at the present day there is a demand only for the cheapest kinds of iron, and for the very best. For the cheapest iron, our old-established Staffordshire ironmasters cannot remuneratively to themselves compete, and our best is not as yet made in sufficient quantities.

So these reasons will serve to show how the apparent retrogression in the commercial prosperity of our iron trade has been brought about, and what are the hopes of the future. Already in Wales the long-neglected purer iron ores are being reopened as the Bessemer process becomes introduced, and in time Wales will take a proud position, and be prepared not only to make the cheapest kinds of iron, but also the best qualities known now as steel. The vexed question of puddlers' strikes has also had much to answer for in the past, but happily the wider introduction of the new system will render iron-masters less dependent on such unfortunate interruptions of important works.

The wider use of Bessemer steel will afford architects an extended range for carrying out constructive and ornamental details. Its extraordinary malleability, in a certain state of manufacture, is a most valuable quality, whilst its great strength and lightness permit delicacy and minute finish.

The subject of metallurgy, some features of which we have thus far briefly sketched, is fully treated in the recently-published volumes whose names appear at the head of this notice.

For the first, on the "Elasticity, Extensibility, and Tensile Strength of Iron and Steel," we are indebted to Sweden. The work is, in fact, a report by the author, Knut Styffe, Director of the Royal Technological Institute at Stockholm, prepared by the instruction of a Royal Commission from the king of Sweden upon the fitness of Swedish iron for railway purposes, and embodies a series of protracted and interesting experiments of which the results are fully and impartially given. The tests applied for the purpose are minutely described, and the effects of temperature as modifying the conditions of the material are elaborately examined. The results of all the experiments are clearly set forth in tables, which will be found most useful to the student. On p. 70 is a *résumé* of the results of experiments made upon tension, which gives in condensed form so much valuable information, that we regret space will not permit quotation; the student is referred, therefore, to the volume itself. The second chapter is devoted to the application of the foregoing results, and the useful nature of its contents may be seen from the following sketch of its various headings:—

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* "Iron and Steel. The Elasticity, Extensibility, and Tensile Strength of Iron and Steel." By Knut Styffe, Director of the Royal Technological Institute at Stockholm; translated from the Swedish, with an original Appendix, by Christer P. Sandberg, Inspector of Railway Plant to the Swedish Government, Assoc. Inst. Civ. Eng.; with a Preface by John Percy, M.D., F.R.S. London: John Murray, Albemarle-street. 1869.

"A Practical Treatise on Metallurgy," adapted from the last German edition of Professor Kerl's "Metallurgy." By William Crookes, F.R.S., &c., and Ernst Röhrig, Ph.D., M.E. In three volumes. Vol. ii. Copper, Iron. London: Longmans, Green, & Co. 1869.

"Iron and Steel Manufacture: a Series of Papers on the Manufacture and Properties of Iron and Steel." By Ferdinand Kohn, C.E. London: William Mackenzie. 1869 (Reprinted from "Engineering," revised and enlarged by the Author).

"Iron: its History, Properties, and Processes of Manufacture." By W. Fairbairn, C.E., LL.D. Third edition, revised and enlarged Edinburgh: Adam & Charles Black. 1869.

1. Preference of steel to iron for such purposes as require a combination of strength and lightness. 2. And for such as require strength and hardness to resist wear. 3. Importance of extensibility in materials employed for machinery and buildings.* 4. Relative capacity of steel and iron to endure sudden shocks. 5. Best material for articles occasionally subject to severe shocks. 6. Choice of material for articles commonly subject to slight shocks or vibrations. 7. Most suitable degree of hardness for steel to be used for tyres, axles, &c. 8. Employment of iron, which has become stiff by mechanical treatment. 9. And of iron containing phosphorus. 10. And of iron containing slag. 11. Advantages of a pure iron for general forgings.

The next chapter is devoted to experiments on tensions at low and high temperatures, and contains a theory which it is fair to say the translator of the work does not endorse, asserting that although the experiments are most carefully and impartially performed, the conclusions arrived at are justly open to hesitation. These remarks are given in an appendix by the translator, and relate to the reasons assigned by the author for the breakage of metals during severe frost. Professor Styffe seems to assert that the absolute strength of iron and steel is not diminished by the influence of cold on the metal itself, but that the liability of fracture of railway tyres and rails, for example, occurs from the elasticity of their supports being destroyed by the freezing of the ground, and the hardening of the sleepers. On this opinion being combated, the author still asserted that frost could have no influence on iron in its resistance to blows, provided the elasticity of the supports was undiminished; so, to ascertain the real position of the case, experiments were made of a practical nature by Sandberg (the translator of the work) at Stockholm in the winter and summer of 1867. These experiments are fully detailed in the appendix, but the following facts may be briefly gleaned. Iron rails were supported on blocks of granite built up on solid granite rock, and were broken into halves, so that the conditions of each portion under experiment should be precisely the same. These were then tested by the falling of a heavy weight, one in winter at 10 degrees Fahrenheit, and the other in summer at 84. The result was, that the one thus tested in the winter would not sustain much more than one-fourth of the blow that it resisted in the summer.

The concluding chapter details experiments on Flexion at different degrees of temperature, and although short, is comprehensive.

The translation is clearly written, and the style simple and interesting. The tables are copious, and the illustrations exceedingly well drawn and engraved. The volume is a fitting companion to many others from the same publishing house, and, like all of Mr. Murray's issues, is handsomely printed, on good paper, and in large and readable type. It is a valuable contribution to the literature of metallurgy, and will be found of practical utility.

The "Practical Treatise on Metallurgy, by Crookes and Röhrig," that forms the second of the series on our list, is a thick octavo volume of nearly nine hundred pages. It is in itself the second volume, and is to be followed by a third. The production of copper forms about a third portion of the work, the remainder being devoted to iron.

The scope of this present volume may be understood from the comprehensive table of contents, and the value to a reader is considerably enhanced by a very clear index at the end. This feature is one, the necessity for which cannot be too often insisted upon, and in this case it is given with commendable amplitude and intelligibility.

The work is an exhaustive and comprehensive treatise on metallurgy, and is so clearly written, and so well and intelligently arranged, that no student will regret obtaining it as a work for reference and study. The language is simple, and an immense amount of information is given in short, pleasantly fluent sentences, that render reading easy and convert a severe study into an agreeable task. A feature in the work is the separation of chapters into heads, and these into shorter subdivisions, each one readily distinguished by its own heading in distinctive type, thus materially assisting the student in his search for special information. We have scarcely ever read a book arranged with so much judgment in this respect; the clearness of the construction, the classification of the subjects, combined with the simplicity and directness of the language, are the best possible proofs of the mastery of the matters treated on by Messrs. Crookes and Ernst Röhrig. The book itself modestly is called an adaptation from a German work, the metallurgy of Professor Kerl, and is put into a readable form that will largely commend itself. It is well printed, illustrated with upwards of 270 wood engravings, and is published by Messrs. Longmans, Green, & Co.

The last on our list, "Iron and Steel Manufacture, by Ferdinand Kohn, C.E.," consists mainly of papers written by the author for the pages of *Engineering*, and added to these are further elucidations from his own pen, and some interesting descriptions of important ironworks by Mr. Zerah Colburn, C.E. The volume is of large quarto size, contains a great number of valuable engravings, and is dedicated to Mr. Henry Bessemer. In the preface the author modestly gives the reasons which induced him to present the work to his readers, and as these state in brief the whole scope of the work, we will let him speak for himself.

"In collecting into a volume a series of articles on the manufacture of iron and steel, which have appeared in *Engineering* during the last two years, the author believes that he has undertaken a work of utility rather than ambition. The republication of articles which have appeared in a widely circulated professional journal, and of which a considerable number have been reprinted, translated, and quoted in the leading professional papers in this country, in America, and on the Continent, may, perhaps, at first sight, appear uncalled for and superfluous; but the fact that in their original form these papers are irregularly scattered through seven different volumes, and that some of these volumes are out of print; the fact that no systematic record of the important progress made during the last five years in all branches of iron and steel metallurgy, is in existence at this moment; and the fact that the attention of the public has at no time been more closely and more generally given to this subject than is the case at present: these facts, the author believes, will be found sufficient to justify the compilation of the present volume."

In the work will be found full descriptions of all the most important ironworks, accounts of the processes employed, and illustrations of the machinery. There is much very valuable information simply and interestingly told, but the serial form is unpleasantly prominent, and we cannot refrain from the remark that we wish the writer had re-written and re-arranged the work in smaller form, with only a selection from the illustrations; then we should have had a most readable and handy book, which at this time could have been warmly welcomed.

Towards the end of the work is an excellent account of the iron and steel in the Paris Exhibition, and of the celebrated works of F. Krupp, at Essen, in Rhenish Prussia. The volume concludes with a description, with illustrations, of the machinery employed in testing metals for constructive and engineering purposes. It is published by William Mackenzie, 22, Paternoster-row, London, and is well printed and substantially bound. The illustrations are large and well executed, and the type and paper correspond.

The value to an architect of such volumes as the above, which afford a means for the study of metallurgy, need not further be insisted upon; the subject itself is interesting, and repays investigation largely. In excuse it may be urged that in an architect's practice there is not left much leisure for scientific study, but no man exists but may so methodise his time as to be continually learning, and the developments of improved iron-manufacture are so rapid and important, that none can safely rely on the unsatisfying information to be got from published tables such as are too generally hunted up when reference is made as to the dimensions of a requisite girder or a column. The good architect will, by keeping himself informed of what is daily going on, be able to intelligently direct the use of materials that are now so largely employed; the art-worker, too, and the art-designer, have a common interest in investigating the applicability of new results of metal manufacture; and finally the important iron trade of our country will reach a more healthful state as knowledge becomes extended and prejudice removed.

* The meaning of the word "extensibility," which frequently occurs in the work, is explained to be as nearly translated as one English word could represent the Swedish, and to mean that property by which the metal assumes a greater or less permanent elongation, in opposition to elasticity, by which the metal comes back again to its original dimensions. Such, at all events, is our comprehension of the intended meaning of the author in using he Swedish word "tänjbarhet."

COMPETITIVE DESIGNS FOR ST. LUKE'S PAROCHIAL SCHOOLS, GOLDEN LANE.

IT is a difficult task for an architect to arrange a complete National School establishment upon a confined site in a crowded neighbourhood in the city of the metropolis. The regulations of the Committee of Council on Education are, under the most favourable circumstances of site, sufficiently exacting; but when these have to be combined with large requirements, low cost, difficulties as to rights of way, limited space and approaches, and circumscribed means of obtaining light and ventilation, the task becomes even more onerous. The trustees and committee of St. Luke's Parochial School, Golden-lane, have presented this puzzle. They offer premiums of 50*l.* and 30*l.* respectively for the best and second best designs for the new boys' and girls' schools, which are to include residences for a married master, the unmarried mistresses, and the assistant master, each to themselves, besides committee-rooms, and various offices; and to this invitation thirty-three competitors have responded with drawings 199 in number, 32 being based on a Gothic treatment and 1 Italian. These have been on view in the old School-house, in Golden-lane, for the last ten days.

There is a remarkable feature in connexion with this competition that deserves attention at once. By an omission in the instructions, or in the absence of a personal inspection of the site, nearly all the competitors have ignored the fact that the Metropolitan Board of Works forbid the re-erection of any building over the gateway at one end of the frontage of the new site. The site, which has a frontage to Old-street, on the Finsbury Prebend estates, is now occupied by old buildings, including a house built over a gateway leading from the street to a timber-yard in the rear. It is proposed to clear away all the existing buildings, including the erection over the gateway, for the new schools. The Board of Works, however, step in, and prohibit the trustees from rebuilding on this private gateway, although the site is included in the lease to the trustees of the school by the Ecclesiastical Commissioners. The competitors, losing sight of this prohibition, have planned the schools to include the curtailed space. Excluding this important consideration, the designs exhibit a large amount of careful thought. The difficulties by which the subject is beset are exemplified by the various imperfect modes in which the accommodation is provided. In some of them the playgrounds are placed in the basement, as cellars, with absolutely little or no light; in some the entrances are to be used in common by the children of both sexes; in others but one staircase is employed for access in common to both the schools and all the residences; in nearly all, the schoolrooms are placed one above the other; in a few the residences for the masters and mistresses, married and single, are placed in the attic floor, on the flat-system, with kitchens, bedrooms, larders, and sanitary conveniences all in too close and most inconvenient proximity, and with wearisome approach.

Setting aside those competitors who are debarred from all consideration by failing to comply with the instructions as to the scale of the drawings, or by excess of expenditure, viz.:—"Health and Education," and "*Dit*," whose estimated cost is 5,000*l.* instead of 3,000*l.*, the average of the rest; and "*Fides*," who shows a wide street at the corner of his building which does not exist, and whose scale is 1-8th instead of ¼ in. to the foot; we come to nearly the only design whose external façade presents (as all buildings should), at a glance, the purpose for which it is intended. "Antonio Masa" places the schools as a centre, with high roof and bell-turret straddling it, rising above the residences which flank it on either side. If the ground-floor were raised to give more light to the kitchens of the houses, and to the playgrounds in the basement; if the girls'-school on the first floor had more height (it is only 13 ft., while the boys' school, on the second floor, with better chance of light, is 16 ft.), and better provision were made for light and air to the sanitary conveniences, and advantage taken of the side-lights to be obtained from the unbuilt upon

gateway, this design would be improved; already it has elements of success about it. Cost 2,750*l*. In the Classic design of "St. Luke" the second, or top story is devoted entirely to the objectionable arrangement of the whole of the culinary, sitting, sleeping, and sanitary apartments of the masters and mistresses, married and single, in one flat! The partitions dividing these numerous rooms rest upon the ceiling of the boys' school, a room 40 ft. 6 in. by 31 ft., and 18 ft. in height. The drawings show no sufficient provision for the construction of the partitions over this room of 31 ft. span. The playgrounds are in the basement, and the ground floor is raised a good flight of steps to give light to these; but the children have first to go up the flight of steps to the entrances at the ground floor, and down internal flights of stairs to reach the playgrounds. The street elevations are promising and neat, but have nothing of a scholastic character about them; they are alternative in design, the one to cost 3,290*l*., the other 3,275*l*.

"*Qui parcit virgæ odit filium*" is too ecclesiastically monastic, and too rich for such a plain prosaic parish as St. Luke's. The interior is sacrificed for the exterior, and we doubt whether such a highly adorned Early Gothic building could be erected for anything like the estimated sum of 3,000*l*. The partnership design marked "Work" is more to the purpose. The authors avoid all expensive decoration, they state, keeping the façade as plain as a public building of the character would allow, feeling assured that the committee "would prefer the money spent in sufficiency of accommodation and stability rather than frittered away in prettiness of design or needless ornamentation;" and this they contrive to do for an estimated cost of 2,976*l*. 13*s*. 4*d*.

The designs of "A. Z." are wrought out with special regard to the site. The author places the playground in the basement, the sitting-rooms for the master and committee-room on the ground-floor, the main domestic accommodation for the teachers on the first floor, the boys' school on the second floor, and the girls' school on the third floor, and a considerable space is reserved in the rear for light. In many respects this design is satisfactory, but the girls' school is sacrificed for the accommodation required in the provision of the committee and attendant rooms. The playgrounds in the basement must be very dark, as they are only 9 ft. high, and the ceiling of them is not raised more than a couple of feet above the pavement of the street. This author does not avail himself of side light from the gateway, and shows in his external perspective view the dilapidated house over the gateway as if it were to remain attached to the schools.

"Education" has fallen into the common error of proposing to build over the prohibited gateway space, and hence, as the entire arrangements are affected by this mistake, the plans are impracticable. "*Dum spiro spero*" is bad in the following respects: there is but one staircase, to be common for the boys' and girls' school, and master and mistresses residences; and the playground is in a cellar. The superficial area of the boys' school is very large compared with some others, being 1,800 ft.; the lowest area shown is 1,182 ft. There seems to be a general misunderstanding as to the superficial measurement required by the Privy Council for each child. One of the competitors naming it at 6 ft., and another at 10 ft. Under the figure of a Maltese cross, one competitor shows the trustees how to build for the low sum of 2,500*l*. a school without any playgrounds, and by using the space tabooed by the Board of Works, crowds a good deal of accommodation into the site, by an arrangement of giving the ground-floor to the girls, the first story, or middle flat, to the residences, and the second, or upper flat, to the boys. Another, "St. Luke," No. 1 in order of arrangement, would place the boys' and girls' playgrounds in a basement or cellar, lighted by a deep area 5 ft. wide in the back, and one 2 ft. 6 in. in the front; the boys' school and class-rooms on the ground-floor (the latter lighted by windows in the 5 ft. narrow back yard), the girls' school on the first floor, and the teachers' residences on the second floor; the kitchens being placed in the basement dark cellars. This is the author who states that 10 ft. are required by the Privy Council on Education for each scholar. "*Cum marti minerva*," in two alternative plans, arranges the different floors round an internal yard or well, about 30 ft. by 10 ft., and thus gives very imperfect light to every apartment lighted from it. A sensible feature in them is that of the boys' school, in the upper story, which has an open roof 20 ft. high to the collar beams. "*Sagittarii*" exhibit a book containing a photograph of their perspective view, and lithographs from their plans, which have some good points. In this design the girls' school is on the ground floor, the boys' on the first floor. "*Ab initio*" places the playground in the basement,—that for the boys in the front, and that for the girls in the rear. The boys' school occupies the whole frontage of the ground floor. "Nature is my Guide" stows away the teachers in apartments in the attics, and makes the stairs to boys' school on the first floor common to both. "Fair-play" soars no higher in the architectural treatment of his exterior than the plain bricky character which distinguishes the buildings generally in the parish of St. Luke.

"Anglican" builds over the private gateway, and even blocks up the gateway itself. The author has evidently not taken the trouble to inquire into the nature of the site at all. "*Utilitas*" is utility with a vengeance, without any convenience at all. The boys are to enter the school direct from the street, without any porch, lobby, or cap and cloak place; a regular old-fashioned, rough and-ready, out-of-date,—one of the very old-school sort of men,—the author must be, surely. "Much for Little" crowds all the establishment into two stories only, besides the basement. The playgrounds are simply dungeons. The doors of entrance for both girls and boys are close together in the centre of the ground-floor, with only a mullion between them. If the boys and girls could assemble and be dismissed at separate hours, this arrangement *might* do. The assistant master is to have dreary and dismal quarters in the rear of the ground-floor. In "*Vive valeque*" we have a still worse contrivance for the non-separation of the sexes. There is but one entrance for both girls and boys; the girls have to pass through the boys' playground to get to the stairs to their schools, which said stairs are also, in fact, common to both boys' and girls' schools.

The author of the designs marked with a red quatrefoil, is distinguished from the rest, by dividing his frontage into four stories, thus:—the ground-floor to playgrounds, with arches next the street; the first floor to the girls' school; the second floor residences in a flat; the third floor to the boys' school, which has six three-light tracery windows all gabled. The staircase accommodation and the sanitary provisions are lamentably deficient.

"⊢ Bonus" ignores the private passage, and adopts what we may call the dove-cot style—there are so many fanciful pigeon-house projections in the façade; and illustrates his plans in three shabby drawings.

There are always to be found, in a general competition like this, the works of inappropriate, slovenly, or 'prentice hands, and there is no exception of the kind here; these we pass by.

We come now to but one conclusion on rising from a careful examination of these designs, and it is this: the trustees demand more accommodation than the site can possibly admit of. If the new parochial schools are to be satisfactorily wrought out, the trustees must forthwith abandon the provision of a committee and waiting rooms, and if they cannot obtain the sanction of the Board of Works to the restitution of that portion of their site from which they are to be deprived they must at least secure the right to have lights in the uncovered gateway. Where so very much is required to be crowded in a small place of the scholastic establishment proper, we cannot see why a school and class-rooms could not be used as a committee-room and waiting-rooms, seeing that the trustees could arrange to sit when these are not otherwise in use; and it is imperative that more space should be secured for light and ventilation by that offered in the gateway. The trustees will of course proceed to adjudicate the premiums offered, for there is ample and worthy material for their decision; but the first-selected designer will certainly have to rearrange his plans entirely to secure the above considerations before the drawings can be placed in the contractor's hands.

Since the above was in type, the trustees have adjudicated the premiums as follows:—To Mr. John Toner, of Furnival's-inn, the author of the designs "A. Z.," the first premium; to Mr. S. Hewitt, of Great Russell-street, the second, for his plans marked "*Cum marti minerva;*" and additional prizes of five pounds each have been awarded to Messrs. Hill & Stevens for their designs, with the motto of St. Luke, and "Antonio Masa," in the person of Mr. J. Niblett, the parish surveyor. We are confirmed in our opinion, by the trustees' adjudication of the prizes, that the author of the accepted design will have to re-arrange his plans.

THE ARCHITECTURAL EXHIBITION, CONDUIT STREET.

RESUMING the notice of this Exhibition which we commenced in our last number, let us be gallant and first give *place aux dames*, for two ladies enter the field with the host of architects. In a little beautiful drawing (4 in. by 2¾ in.) by Lucy H. Bloxham, that might be taken for a page from a missal, entitled an "Illuminated Fly-leaf for Prayer-Book, on Vellum" (19), this lady unfortunately gives a Berlin-woolly character to her work by dividing the diapered ground on which the two figures of St. Peter and St. Paul lie, into little squares. In the more ambitious work of the Lambeth National Bronze Medallist, Helen J. A. Miles ventures boldly on architectural ground with her "Design for a Library Door" (162). At a first glance we mistake it for a drawing of the Ghiberti Gates, and we are not far wrong, for the lady divides her door into eight panels, containing subjects in high relief, with prominent busts between them, and surrounds them with pilasters and panels in many respects similar to the great Florentine work. Her subjects illustrate the works of eight Greek, Italian, German, and English poets to be executed in bronze, viz., Homer's "Iliad," Dante's "Purgatory," Tasso's "Jerusalem," Goethe's "Faust," Chaucer's "Griselda," Spenser's "Fairy Queen," Shakspeare's "Cymbeline," and Milton's "Comus," and an allegorical group of mosaic fills the arch. We should like to see the building that this contributor would make to correspond with her library door. It would be very costly, at any rate.

Proceeding now with the works of the sterner sex, we find an instance of that injudicious overcrowding of buildings on confined sites too frequent in the case of town workhouses, by referring to "Photographs of the New Poor-house, Southampton," by T. A. Skelton (264). The plans and views show a perfect sea of walls and wards intersecting each other, and such a crowding of the different ward-blocks for master, vagrants, receiving, and refractory, for able men and women, for aged and married couples, dining-hall, kitchen, idiots, lunatics, infirmary, and infectious, that the airing yards are wofully curtailed. All the buildings overlook a crowded church to which they are adjacent; the site cannot be cheerful or healthy. The classification is kept up throughout in the different blocks, and these are again planned on the central-corridor system. There are no wards for sick vagrants, and this is an omission. In the "Perspective View of the Residence of Mr. J. Greer, at Pinner" (34), Messrs. Walford, Donkin, & Evill show what can be done in a very artistic manner, by a careful arrangement of ordinary brickwork, combined with varied heights in the building, which give gables at different elevations; and a use of Taylor's ruddy ridge and furrow tile. At the artist's great summer and autumn rendezvous, Bettws-y-Coed, North Wales, there is to be built a new church of local granite, with Cefn stone dressings, to hold 300 persons, and to cost 2,000*l*., and Mr. Charles H. M. Mileham shows the design for it in two external views (47, 48). The main part of the fabric is thoroughly English in tone, but a very eccentric bell-turret appears, which is an adaptation of an old Welsh one, if we remember rightly. "That is the best drawing in the Exhibition," we heard several persons exclaim, pointing to the "Premiated Design for the Bristol Assize Courts," by Messrs. E. Godwin & Chrisp (50); and certainly the authors have given us their work in a most careful brown ink elevation, that looks at a distance like an engraving. Young students, and all draughtsmen inclined to be slovenly, should look at this drawing carefully. Mr. John Foster, in his sheet of fourteen sketches of timber houses and churches in Normandy (4), and in his more finished set of eight well-known churches, also in Normandy (11), is an illustration of a slovenly commencement, and gradual progress achieved by care and finish. The mountainous Welsh districts offer fine opportunities of bold material and site for an architecture that should be, and often is, made cha-

racteristic of the *locale*; then why plant down a half-timbered Cheshire villa at the entrance to the least steep way up to mighty Snowdon, as Mr. John Ladds shows us he would do in his "Design for Glynrhonwy Lodge" (53)? It is a sound practical idea that dictates the illustration of a fine old parish church by large elevations to scale, like those of St. Nicholas's Church, Great Yarmouth, exhibited by Mr. J. P. Seddon (55, 56). The value of the illustration, however, is less when there is, as in this case, no scale attached. Besides the absence of a scale, the omission of a plan is frequently felt by those who would examine a design carefully. How, for instance, can the merits of Mr. T. H. Watson's design for Small-pox Hospital for the Metropolitan Asylum District, Homerton, be tested from his south view (57)? or such a matter-of-fact building as the Workhouse, Darlington, by Mr. C. J. Adams (181), from his perspective view; or, again, how can we ascertain whether the internal arrangements for the Fever Hospital for the Metropolitan Asylum district, Homerton (also an unsuccessful design), by Mr. T. H. Watson (177), are good, when we have nothing to indicate them in the isometrical view shown? Certainly there are labels on the grass, shown oddly in the drawing against the blocks, to indicate one to be for typhus, a second for scarlet, and a third for enteric fevers, but otherwise the view is absolutely useless.

Mr. J. W. Walton gives us two views of Lower Stoughton Hall, Flintshire, restored by him (109), and plenty of little instructive plans in the corners of the views, by which we can at once see the spirit of the whole design. The adoption of a style which admits of nothing but straight-headed mullions and transoms to the windows throughout, not a single arch of any kind being employed, gives a very prim aspect to the building; and it is a mistake to make the entrance to the house through a room jointly used as a "hall and library." Books suffer readily from damp; and they will suffer in an entrance-hall with an outer door, porchless, in it. The "unsuccessful" designs of Messrs. Blackmoor & Withers (so they properly name them in the catalogue), for the Baptist Chapel and St. Mark's Church, Sheffield (92, 95, 101, 102), certainly do not meet our views; the one is not unlike a bazaar, and both are damaged by the flashy figures introduced. There is a certain class of drapers'-show-card-artists in all large towns, and Messrs. Blackmoor & Withers have injudiciously sought the co-operation of one of these to slash the figures into their drawing.

Photography is largely employed for this exhibition, and in many cases where taken from buildings completed, with considerable success. We will mention some of the best and largest of them, though they are nearly all well known:—St. George's Church, Doncaster (155, 156), E. Wormald, photographer; Mechanics' Institute, Leeds (191), and Town-hall, Leeds (190), both designed by Mr. C. Broderick. Mr. G. Corson has a set from buildings executed by him in or near Leeds, "Auction Rooms" (185); "Business Premises" (187), and a "Studio and Dwelling, of Edmund Wormald" (188), all in Leeds: the latter has a clever, acute-angled oriel, corbelled out from the first floor, and is an excellent street front, somewhat too Alhambresque in detail to be practical. He also shows the "Entrance Porch" (186), and a "View from the South" (189), of Foxhill, near Leeds:—a very fine mansion for a city magnate, designed by Mr. Corson, with intense Mediæval fervour, even to the lamp-posts.

Mr. G. Truefitt exhibits one of his characteristic *multum in parvo* designs in "Fernbank, Tufnell Park, Holloway, lately erected" (205). There are few architects who get so much effect out of a plain brick villa for little cost as this author. In the "Designs for proposed Villas and Pavilions on the Manor Estate, South Hayling, and to which first premium was awarded" (207), Mr. A. G. Hennell shows seven little views of villas in the Italian, half-timbered, cottage ornée, and what we may term the conservatory styles. Posterity will be sorely puzzled by such a mixture.

"The Middlesbrough Exchange—Interior of Hall," by Mr. C. J. Adams (200), and "Perspective View of the Colston Hall, Bristol," by Messrs. Porter & Wood (195), the interior so crowded with an audience as to make the hall appear about 150 ft. span, have both been illustrated by us. It is a pity that Mr. E. R. Robson has entrusted the "Perspective View of the Municipal Offices, Liverpool" (179), to a stranger to draw. The view, though large, is faintly and feebly shaded; the draughtsman can be neither an architect nor a colourist; we forbear to give his name, though it is on the drawing. In three highly-finished drawings under one frame—one of entrance-hall and two of a drawing-room—Mr. F. Pantænius shows "Series of Designs for the Decoration and Furnishing a Gentleman's Seat in Ireland" (180), in the modern upholsterer's adaptation of the Louis Quatorze style. Mr. Ewan Christian contributes a careful drawing of "Trinity Church, Folkestone, as designed for the Right Hon. the Earl of Radnor, the nave, base of tower, chancel, and south porch of which were completed last year" (75). This is a design that must be seriously affected by the non-erection of the tower and spire. These are placed at the junction of the semicircular apse with the transepts. The lancet style is adopted with much taste throughout, and we have only one objection to make, and it is to the snow-traps formed by joining all the gables over the aisle-windows together. For "Police and Sessions Courts for the City of Manchester, now in course of erection" (77), Mr. Thos. Worthington gives us, in a red brick building, a Venetian tower at a corner, based upon that of St. Mark; varied, however, by the introduction of arcaded parapets and queer corner turrets at the summit, and by weakening the base in piercing it with a door and window too near the corner for safety to the fabric. It will be an effective structure, nevertheless.

Mr. C. Buckeridge shows some of his quaint and conscientiously wrought-out early Gothic designs, by means of prints by the anastatic process. Unfortunately the plates are so wavy that much of the dignity of the designs is sacrificed. This is notably in "South-west View of Avon-Dasset Church, Warwickshire, now in the course of erection" (91), where the waviness of the paper gives an appearance of the windows and buttresses being out of the perpendicular. In the interior of the same church (152), and that of "Chapel for the Convent (Anglican) of the Holy Trinity, Oxford" (153), Mr. Buckeridge throws his strength upon the enrichment of the altar and retabulum at the east end. Messrs. Bell & Almond exhibit "Designs for Glass and Decoration for East End of St. Gabriel's, Bromley, Middlesex" (132), and "Design for Glass Decoration for the East End of Shouldham Church" (161). In both of these a very elaborate reredos and retabulum are shown; but as they are not shaded in the elevation it is impossible to tell whether they are to be in sculpture or mere wall-decoration; in the latter subject, some saints painted on the wall-space on each side of the windows look in every respect like stained glass; they correspond almost exactly in treatment with the glass in the window in a line with them. In their "Mosaic Reredos for St. Edmund's, Salisbury, now being executed" (163), the Ten Commandments are introduced. The "Decorations of the Gaiety Theatre" are so well known and have been so often described that we need only mention to those interested in the subject that they will find here a section of the theatre (165), the "Frieze over the Proscenium" (164), and the "Lunettes" (166), as designed by Mr. C. J. Phipps, with Mr. H. S. Marks, the painter, as his *collaborateur*.

Mr. A. Waterhouse has a considerably larger and finer view of the Manchester Town-hall (117) than that which he shows in the Royal Academy. The point of view is from Albert-square, and the building presents more of a town-hall aspect from this than any other front. In the "First Sketch of the Interior of the Church of St. Barnabas, Oxford," by Mr. A. W. Blomfield (61), we see that he has taken the basilica of San Clemente in Rome as his model, even to the row of apostles on mosaic ground in the upper part of the domed apse. A large cross is suspended by a chain from the second tie-beam of the roof from the East to mark the boundary between priest and people. The ciborium over the high altar is very rich, and the arrangements and decorations throughout are of the highest-church kind. Another author has gone to Rome for an example. The "Church of St. Bridget, Wavertree, Liverpool," now in course of erection; total cost, 6,600*l.* (exclusive of frescoes only); columns of Irish red and black marble; accommodation for 800 (204), by Mr. E. A. Heffer, is a miniature adaptation of the basilica of Santa Maria Maggiore,—flat panelled and coffered ceiling and all. There are two good Italian designs for a mansion to be erected at Mentone, South of France, by Mr. T. T. Smith (197, 202). They are both placed on the terrace of a mountain, both have loggie in towers, and seem to be so little varied as to make us doubt whether they are not alternative designs. It is not clearly mentioned in the catalogue whether they are both to be erected. Mr. T. Chatfield Clarke sends a pen-and-ink view of a house now being erected at Blackheath for Mr. B. H. Hartley (183). It looks too much like a pair of semi-detached villas. His sheets of office details from works (140, 145) are a little too elementary for an exhibition like this. In the "Selected Design for New Baptist Chapel, Sheffield," sent in competition (110) by Innocent & Brown, we have a clever adaptation of an ecclesiastical building to a corner site upon a hill.

There is a pretty drawing, by Mr. E. S. Cole, of the rear view of the University College building at Aberystwith, designed by Mr. J. P. Seddon (46). The building is well known on account of its strange fate, and castellated architecture. "Competitive Design for new Church at Walsall" (27), by Albert Hartshorne, is modest in design, and of a blushing tone, for it is apparently proposed to be of red sandstone.

Selecting for commendation briefly the strictly archæological or pictorial works,—"Les Halles, Ypres" (1 A); "Whitby Abbey" (1 B), by Mr. G. E. Street; "French Châteaux, traced from original drawings" (7) (excellent examples of the style); the "Pen-and-ink Sketches of Boxgrove, Sapton, and Clymping Churches, Sussex" (15), W. Young; "Rue St. Jean, Caen" (21); "Dol, Brittany;" and "Dinan" (22), by A. Darbyshire; and the photographs and chromo-lithographs of Russian buildings and views, contributed by Mr. Wyatt Papworth,—we come to the photograph of the "New Central Station, Leeds" (now being completed for the Great Northern Railway Company (259), by Messrs. E. N. Hadfield & Son, and which we have before now described.

There are some good photographed specimens of Mediæval sculpture, by Theodore Phyffers, W. Theed, and J. F. Redfern; also some elaborate coloured views by Mr. Thomas Allom; and completing our review by gentle reference to the series of designs for different subjects by members of the Class of Design of the Architectural Association, upon screen No. 3, amongst which should be noticed Mr. R. F. Deal's designs for a warehouse for a river front, we close in the assurance to our readers that though there is nothing very startling in the collection, there is yet a large amount of varied work, and that with Mr. Petit's collection it well repays a visit.

THE SITE FOR THE LAW COURTS.

MR. LAYARD, on Monday night, brought in the Bill for changing the site of the new Law Courts, and repeated the arguments advanced by Mr. Lowe on a former evening, when he first suggested the change. The Carey-street site, he stated, with approaches, would cost 4,000,000*l.*, while Mr. Tite's plan to separate the Offices and Courts would cost 2,710,000*l.*, and Sir C. Trevelyan's 3,250,000*l.* But the more moderate plan contemplated by the Government on the Embankment would only cost 1,600,000*l.*,—600,000*l.* for the land, and 1,000,000*l.* for the building,—and that this would not be exceeded Mr. Layard pledged his reputation. The site was the plot of ground bounded on the north by Howard-street, on the south by the Embankment, on the east by the Temple, and on the west by King's College. It was six acres in extent, and on it could be built, in a line with Somerset House, eighteen courts with their offices, with the capacity of extending either offices or courts northwards as necessity arose. Mr. Layard explained the various advantages possessed, as he thought, by the new site; such as the facility of approaching it by road, river, and rail, &c., and he said that its adoption would lead to no delay. The plans and drawings for the Carey-street site would not be ready for a year, and by this Bill it was proposed to suspend the Standing Orders and proceed as if notices had been given in November last. The Government would be bound to exercise its compulsory powers by July, 1870, and there would be no delay, as the Duke of Norfolk, who owned most of the land, was understood to be anxious not to throw any difficulty in the way. Among other recommendations, he mentioned that he was negotiating for the sale of the Carey-street site for the price given for it, and that the style of the new building, for which the plans and drawings would soon be ready, would most probably be Italian Gothic, as Mr. Lowe's notion of utilizing Inigo Jones's façade had been given up.

Sir Roundell Palmer gave notice at once that

he would move the rejection, on the second reading, of what he characterised as the worst scheme yet proposed, and the certain ruin of a great public improvement. He warmly defended the Commissioners against Mr. Lowe's charges of extravagance and reckless inflation of the original estimates, and made an animated attack on the new plan. It had no approaches east or west; its levels were bad; it would advance to the very edge of the railway cutting; it would block up the Strand; and the building, put down in a hole where nobody could see it except from the river, would be no ornamentation to the metropolis. The profession was almost unanimously, and certainly by a large majority, against it; and finally he declared that there was nothing he would not do to upset the plan.

The bill was brought in.

The present plan of the Government offers no single excuse for the change of site: even the arguments that were used to support Sir Charles Trevelyan's original site disappear. If a smaller building than was at one time thought necessary will suffice, it can as well be placed on the Strand (or miscalled Carey-street) site, already in our possession, as next the Embankment, and with infinitely better effect with reference to the adornment of London than if it be buried behind the houses on the south side of the Strand. The land already bought offers a noble position for a noble building; and its superiority with reference to the greatest convenience to the greatest number is so universally admitted as to require no argument.

THE EXHIBITION OF THE ROYAL ACADEMY.

If there be no great increase in the number, no great accession of particular interest in the nature of the works exhibited this year by the Royal Academy in their splendid new home, compared with those of former times, when their local habitation was less worthy of their name, it certainly appears to be a longer day's work than ever used to be the case, to see all that is to be seen. This is partly attributable to the fact of every picture included in the collection asserting a right by its position to a thorough examination; so many are to be seen, and so well worth seeing, and of these a few of superlative excellence grace the fine galleries, though it happens that both members and associates are more generally represented by the numerical strength of their contributions rather than by examples that precedent would allow individual reputation to rest on.

To inaugurate the new era, to commence the second century of the Academy's existence with a production that will help to commemorate it, Sir Edwin Landseer has specially distinguished himself—even in comparison with himself—by the more than renewed power manifested in his chief work. "The Swannery invaded by Sea-eagles" (120) is a magnificent attestation of consummate skill; wonderful for the force of its representation. Its reality gives it that eloquence an Æsop would fail to impart to birds that speak in fable, if he attempted to describe in epitome tyrannic and unexpected invasion. The peaceful swans have fought to the death in defending their "arch-necked princesses" and their little ones; it is almost possible to hear the flutter of blood-bedabbled wings and the scream of the eagle struggling in its efforts to rise in the impotence of a broken pinion. Even whilst most admiring the unparalleled ability displayed in this depiction of savage onslaught, its very truthfulness exacts something like distaste with the astonishment at all its marvellous perfection.

Two slight but masterly studies of lions (30 and 32), and a brace of setters complacently watching a covey of birds on "The Ptarmigan Hill" (224), are further examples of Sir Edwin's wonderful dominion in animal painting; of the perfection attained in the use of the brush, never yet excelled, and of the aptitude for giving vitality to everything zoological he may select for its exercise.

Mr. Millais maintains his right to be considered thoroughly original; he is of those who recognise grandeur in simplicity: his full-length portrait of "Nina, daughter of Mr. Frederick Lehmann" (127), is a charming picture, a work of extraordinary beauty: the faculty of direct imitation chastened by rare taste in the adjustment of whatever is to be imitated, is evident in it. With him everything is paintable, any arrangement of colours perfectly practicable for the most agreeable results. He has been fortunate, too, in his sitter,—a type of fair golden-haired childhood, who is posed in the most natural of attitudes, with innate grace enough to account for it. The little lady has become the gem of such an artistic setting as would enhance the lustre of the brightest. In direct opposition to this, the fancy portrait of "Vanessa" (357) has afforded him an opportunity of showing how he can manage to harmonise the most intensely positive of colours; for, in spite of the gorgeously embroidered drapery, the head is very life-like, and so forcibly painted as to assume its right of being first considered; though the former work, with its exquisite refinement, derived in great measure from the inimitable combination of delicate hues and tones, is by far the greater achievement. Mr. Millais was quite independent of adventitious aid in making a picture of Mr. John Fowler, the engineer, and a very valuable one (225), for it is a likeness stamped with the simplicity of direct resemblance. "The Gambler's Wife" (104), in sorrowful contemplation as she stands in the lately vacated room at dawn, examining the cards, the instruments of impending ruin, is pathetic without being sentimental, and with two highly-finished water-colour drawings, well supplements Mr. Millais's more important contributions.

Mr. Maclise is very conspicuous in a composition that exhibits some of his best characteristics,—"King Cophetua and the Beggar-Maid," for whom he was "glad and faine" to stultify his expressed disdain for "lovers' looks" (171). The king, seated in his tent, or rather at the entrance of it, is regarding with novel interest the fair object of his very impulsive matrimonial intentions; for she is very fair and winsome, though in rags, and bidding his cup-bearer to fill him the wine, with which he prefaces the declaration that,—

> "She shall be queen this beggar mayde,
> If she'll not say me nay."

His armed warriors, courtiers, and attendants, are variously influenced; some seeing at once, others unable to comprehend "what there really is to see in the young woman." As usual, minute elaboration pervades this picture; and the skilful drawing, wealth of accessories, and invention of ornamental detail, are as remarkable as in any preceding instances of their employment.

Mr. Frith has been diverse in his choice of subjects: one from contemporary domestic history, an episode of old, new, and ever-recurring events, for it happens to most men with marrying prospects. In "Hope and Fear" (82) are two subjects of the blind god's autocracy in one frame—in a frame to become one, subject to papa's approval, which is being requested with a proper degree of earnestness by a very nice young gentleman of eligible appearance; but papa has arrived at that age to know that appearances are deceitful; he has long ago learnt the price of bread and butter, and babies' shoes, and hesitates whilst cogitating on the proposal, for he has too many books by the best authors in his well-furnished library not to be very clever and wise, and is one of the least likely to be addicted to sensational romances. Harriet Georgina—for she has a nominative expressiveness about her besides the nominal—fears he *would* hesitate, and has sought shelter and sympathy in the drawing-room and her mamma's arms. It need scarcely be told how nicely and naturally Mr. Frith has related this chapter from the volumes of every-day interest, or how much his relation with the two positions—the one awful, and the other fearful—has increased their intensity by illustrating them so admirably. His principal work "Altisidora, pretending love for Don Quixote, feigns a swoon at the sight of him" (123), is very finely painted; the figure of the impostor—though it appears rather disproportionately small from the waist to where the feet would be—and the imposing figure of the imposed-upon Don, are specially distinguishable for extraordinary technical value. Still more power is exhibited in a capital portrait of "A Man in Armour" (253), one of the very best portraits in the galleries.

"Nell Gwyn" (291) "selling oranges and pippins, with pertinent wit, gratis, to liberal fops who would buy the first and return the second with interest," as Dr. Doran says, will scarcely realize a conception of the archness and captivating charms of this "smartest and most audacious of orange-girls;" she has not the look of the period to indicate her attractiveness for the swells who so delighted in her impudence. The costumes are very brilliant and tasteful, with the exception of Nell's, which appertains more to the country than the town. A smaller picture, of the scene from "Twelfth Night" wherein Malvolio, married to the countess in imagination, soliloquizes (391), shows the same dexterity, the manipulative proficiency attained by the painter that has made him so popular.

Mr. Faed always secures a wide circle of appreciators by his appeal to common sympathies. The poor little crossing-sweeper, who, "Homeless," is sleeping in unhappy ignorance of rent and taxes on the steps of a porched doorway (73), whose unconsciousness of water-rate and of what the meaning of soap may be, have made him in his wretchedness and ragged attire, an object of interest to so many more than the policeman treading his beat at dawn of day, and blinking in the lamplight as creatures deprived of natural rest, and forbidden to take even forty winks on a doorstep, are wont to do,—is, by the aid of Mr. Faed's most fascinating style of depiction, raised to poetic significance. N.B.—Why have painters never made a hero of a policeman? Anybody in the class answering the riddle may "take us up."

Look, too, at the old pedlar-woman, who has "Only Herself" to care for, or take care of her, and sighs for social intercourse (119); "Alone with Her Thoughts!" As a song may awaken some scenes long forgotten—some haunts long forsaken,—so the laughter of childhood has brought back her home. But, alas! for the vision! she's alone—all alone. Mr. Faed has never succeeded better in enforcing the gist of his appeal, than in these expressive types of homelessness and loneliness. The command he has of executive means enables him to do wonders in the most ordinary appliances of them; as in "Letting the Cow into the Corn" (205) he represents a Scotch lassie indulging in a day-dream; or in "Faults on Both Sides" (231), a couple of peasant-lovers, who have quarrelled for the pleasure of making it up again; or in the impersonation of shrewd Scotch character (264), "Donald Mac Tavish;" all these indicate his capability of making much of very small matters.

Mr. Elmore is another who glories in a style: rich colour and strong opposing effects have given great force to his "Judith" (395); painted life-size, as standing at the entrance of the tent from which artificial light is illuminating the shadows cast by the stronger light of the moon, she appears stealthily approaching to wreak her vengeance on Holofernes. "Katherine and Petruchio" (164), however, are not lifted out of the ordinary level of their usual representation by any extraordinary conception: faulty drawing has in some degree counteracted the worth of clever painting. "Home Life in Algiers" (229), and "Algerine Jewesses" (462) testify to their probable naturalness by their peculiarity of characterization, and are, besides, very carefully and cleverly portrayed. Mr. Elmore's other contributions are, a young wife "Watching and Waiting" at dawn, for her husband's return (95); "A Sketch from Nature" of a young lady sketching from nature, very bright and decided in its rendering (823); and a fine portrait of "John Simon, F.R.S.," medical officer of her Majesty's Council (879).

Mr. Leighton stands alone this year for the academic knowledge and ideal grace with which he qualifies his study and treatment of the nude. He has several large subject pictures conceived in classic taste, and although derived from dead language he invests them with sufficient vitality to realize them for general apprehension as facts. "Helios and Rhodus" (864) illustrates one of the mythic identifications of islands with nymphs who are lovely and of course loved, and gives a name and a purpose far a fine picture; "Dædalus and Icarus" (469), who revive the antique in form and physiognomy; and "St. Jerome" (377), his diploma work, with the saint kneeling in prayer before a crucifix; and, last and best for good drawing and agreeable colour, "Electra at the Tomb of Agamemnon" (705), are his other contributions.

Mr. Calderon has managed to give some novelty to his handsome pair of lovers, who are in a boat drifting down the stream, whilst the gallant rower is resting on his oars, gazing at the proud beauty who has enslaved him, and "Sighing his soul into his lady's face" (128), and she, with downcast eyes, trails a lily in the water, for the sake of having something to do, as they float along. The fifteenth-century costumes, picturesque boat, and the admirable manner in

which it is painted, makes this a very favourable example. "Catherine of Lorraine, urging Jacques Clément to assassinate Henri III." (67), is another and more ambitious performance by the same artist: the character and expression of both actors are very appropriate to the situation, which is a very dramatic one, and the work is distinguished by rich subdued colouring, and solid masterly execution, though the drawing is faulty in parts that would soonest betray it; the hands of the monk appear to be very large. (643) "The Fruit-seller," a water-colour drawing, would scarcely be taken for Mr. Calderon's.

Mr. Lewis is to be seen in unusual force; the marvellous intricacy of his pictures is positively bewildering. The interior of a harem at Cairo, with "an intercepted correspondence" to put into extra flutter its occupants, if their imperturbable natures could ever allow them to be in any flutter at all, is the most elaborate of them. A young girl has been detected in establishing communication, by means of flowers, with some one she prefers to the old Turk, her lord and master, and who is giving her a lecture on her impropriety, disclosed by a black slave with the last floral *billet-doux* in her hand as evidence in proof, while the other ladies of the seraglio are looking on with various degrees of interest expressed. Some think it good fun; others think the delinquent will not find it so, and are very glad of it—for there is such a thing as a jealous woman in Turkey, though they do live in such a united happy-family kind of way with cats and gazelles: one languid lady evidently thinks her a fool for being found out; but, after all, the wonder at the achievement is not created by the subject of it, but by the rendering of the accumulation of objects represented: the most opposite of colours in dazzling brightness brought in contact: the most elaborate embroideries, decorations, lattice-work, and a profusion of rich materials of all descriptions, with patterns it takes patience even to examine, are all precisely given with more than photographic fidelity.

Mr. Hook has painted, on rather a large scale, some "Cottagers making Cider" (124); the composition is as unpretentious as its title, for he has relied on the rare power he has of conveying absolute naturalness into all that he represents, in preference to a more sophisticated attempt at picture-making for gaining interest. However, the sturdy peasants engaged in the operation, the rude mill and press, with other implements used in the process; the apples of many a sort, and the landscape to be seen from beneath the cart-shed that shelters all the cider-makers and the cider-making, are of that picturesque nature that the result, as adduced by the artist, is a very agreeable one, besides being an example of Mr. Hook's peculiar forte. Two children perched on the rocks, "Caught by the Tide" (332), and signalling a distant boat, are surrounded by a sea that is a perfect triumph of representation; and a happy fisher family preparing for breakfast in "The Boat" (217), their freehold residence,—"It served them for kitchen and parlour and all,"—are delightful in their freshness, their pure natural truth.

THE DISTRIBUTION AND AGRICULTURAL USE OF TOWN SEWAGE.*

FOR the last eight years I have studied deeply and carefully the question how to dispose of the sewage of London; and my pecuniary stake in the successful solution of this question has been and is so large, that it is, perhaps, the best guarantee that I have left no stone unturned in my endeavours to ascertain the truth. The various experiments conducted by the Metropolis Sewage Company, both at Barking Creek and on their experimental farm a little beyond Barking, as well as those conducted by myself on a smaller scale on my own land, have given me an opportunity of acquiring knowledge in this particular branch of agriculture, which, I believe I may safely say, no one else has enjoyed; and it is only the consideration of these exceptional advantages which has made me presume so far as to address the Institution of Surveyors on such a subject.

In considering the utilization of sewage by irrigation, we may usefully divide it into three heads;—first, *Conveyance* of the sewage from the town to the country; secondly, *Distribution* throughout the district proposed to be irrigated; thirdly, *Application* of the sewage to the actual soil or crops.

Now, with regard to the first question I need say very little. An experienced surveyor will naturally avail himself of the readiest means at his command for conveying a large body of noxious liquid from one district to another. He will be guided by local circumstances and local materials in designing his work, and the nature of the work will, in some degree of course, also depend upon whether the levels of the ground permit of gravitation either by purely natural fall, or by means of a short lift, or necessitate forcing by expensive machinery. I will merely remark that there is of course a great convenience for distribution in what I may term the luxury of pressure. If the main culvert or sewer be an iron pipe of any description, through which the sewage is forced by powerful engines, it becomes a very easy and simple matter to attach a pipe at any point for supplying any land, no matter where situated; but if the main outfall conveys the sewage by gravitation only, then the sewage can only be distributed by the same means, and of course can only be taken to land on a lower level than the outfall, and this, in many places, becomes a most serious difficulty.

But this brings me in fact to the consideration of the second division of the question, namely, *Distribution*.

The distribution of the sewage of a small town of 10,000 or 20,000 inhabitants is a simple enough affair, for it is distributed on one farm only, and that farm is of course chosen so as to be more or less in a ring fence; but if it is desired to deal with the sewage of a great city, much more contriving is necessary. For short distances and low pressures, earthenware pipes may sometimes be used for the lateral channels, but they are not satisfactory; and it must always be recollected that the bursting or leakage of a sewage pipe is a somewhat serious affair, even in the country. Iron pipes are, of course, always the handiest and neatest things to deal with, but they are expensive. Earth ditches are perfectly effectual, and are, perhaps, the most convenient of all for communicating with other minor branches; but unless the lie of the land coincides exactly with the fall required to be given to distributing channels, the earth ditches soon become very expensive in construction, and wasteful in the space occupied. And in view of the several difficulties and drawbacks attending the use of either ditches or earthenware or iron pipes, I have devised a new method of distributing sewage, which, I think, is likely to prove useful in some localities. It is very simple,—consisting merely of sheet iron troughs, with a semicircular section, supported upon rough wooden legs of any required size and length. Such iron troughs, at whatever elevation from the ground,—and in most cases a very few feet are quite sufficient,—occupy no more space than a ditch would occupy when running with a fall coincident with that of the land itself. Therefore, there is no permanent waste of land in a broad embankment, and the outlay becomes less than the outlay in constructing a raised up ditch when a very few inches in height are attained. If any unusual height is necessary, to bridge over a hollow for instance, the section of the trough may be slightly altered, and, instead of being semicircular the diameter may be diminished, and to the prolongation of the sides of the smaller semicircular trough thus formed may be riveted stronger plates to act as girders, and so the original sectional area would be preserved. With troughs so constructed, having a few angle irons bent all round them outside, a very strong and durable kind of semi-tubular bridge would be obtained. I may mention that I have made an experiment with about a mile and a half of semicircular troughing far thinner than that which would be used in a permanent work, and that this troughing is placed at an unusual height, being for a great part of its length from 16 ft. to 22 ft. above the ground. It is, moreover, in a most exposed situation, and has, nevertheless, stood all the severe gales of last winter without the very smallest sign of giving way.

Difficulties for the first few years may arise in arranging for the distribution of the whole sewage of a large town over a wide area of land, if there are a few obstructive people in the area who fancy that they could make more by standing out and refusing to take the sewage, than by taking it, if compulsory powers have not been obtained. But, even in this case, it would be a pecuniary rather than a physical difficulty; for, in the neighbourhood of any large town, the country roads are always numerous, and power may always be obtained from Parliament, on the precedent of the Metropolis Sewage Company's Act, for conveying the sewage in pipes under and along the line of roads. There need, therefore, be no greater difficulty in designing the different channels by which the sewage of a large town may be distributed to any given number of farms, than there is in an analogous kind of work which has been executed by very many gentlemen now present, namely, draining several separate estates into one common outfall. It is simply inverting the process, and, instead of collecting the water from the various estates into one main channel by which it would run away, bringing the water down the one main channel, and then distributing it over the various estates.

Now, with regard to the purely agricultural question of the application of sewage to the soil or crops. I have seen and heard a great deal of vague and loose writing and talking on the different modes of laying out land for irrigation, but further experience has only served to confirm me in my original opinion, that the proper way of laying out land for sewage is, wherever the fall of the land will at all permit it, to lay it out in rectangular "panes," or lands thrown up to a ridge in the centre, a small carrier of say 8 in. or 9 in. wide being cut along the top of the ridge, by which to irrigate the land. This system combines many advantages, and, so far as I see, presents no drawbacks. First of all, the rectangular form admits of easy and simple cultivation by horse and steam power, without turn-wrest ploughs, or any other special apparatus, and this of itself is so great an advantage as almost to outweigh anything that could be urged in favour of any other system. But this is also the cheapest way of laying out land; for it is manifest that from the ridge to the furrow there will always be a sufficient fall for the flow of the sewage; therefore the actual watering of the plants can be done with certainty and regularity, and all that requires to be attended to is the fall to be given to the carrier in the ridge, and to regulate this, unless the land is either very flat or very irregular in formation, very little soil need be shifted, except along the line of the ridge. Moreover, if, during the first year that the land is laid out, there may be a little too much fall from the ridge to the furrow in one place, or rather too little in another, owing to the shifting of the land to fill up hollows and level rises in the length of the ridge, this irregularity will be diminished every time that the land is worked, and so, in the course of a few years, will gradually disappear. Last year I laid out a small experimental field, of some nine acres, on this system under peculiar disadvantages, as the point to which alone I could bring the sewage was slightly lower than most other parts of the field; and although there was very little difference of level in any part, yet such difference as there was, was against me. The field was also irregularly shaped, one of its sides being more than twice as long as the opposite side, and one of its corner angles very acute, and another very obtuse; but, as I ran my lands so as to abut upon or tail off on the side between these two angles, this difficulty vanished; for, of course, it did not the least signify whether the end of each land was square or not. I also laid out the lands of slightly varying breadths and of an increasing slope, beginning with a very flat land and rising to a very steep one,—the last land having a fall of 1 in 10 from the ridge to the furrow. The most convenient size of land is 40 ft. or 45 ft. wide from furrow to furrow, with a slope of 1 in 20 from furrow to ridge. The best mode of conducting the work in laying out lands in this way is, after any small amount of cross ploughing or filling up old furrows, and other similar work that may be necessary, has been got through, to plough the land into ridges approximating to the desired height. These ridges should then be rolled very heavily, when it will be seen whether or not their fall is sufficiently continuous to admit of a carrier being dug in them as they are; and if it is found that any shifting of earth is required, the rolling of the ridge will have answered the purpose of making the carting lighter. You will observe that the simplicity of this mode of laying out land, as compared with attempting to alter the levels of the entire surface of a field, is very great; the labour is, in fact, minimized, and, moreover, for the future cultivation of each

* From a paper by Mr. William Hope, read at the ordinary general meeting of the Institution of Surveyors, on May 3rd.

individual crop, the form of lands which I have described is, I find, very convenient. Of course, the size of each land is known with accuracy; therefore, all the future cultivation, whether ploughing, or hoeing, or weeding, or harvesting, may be done by piece-work, and the quantities of sewage applied and the bulk of produce obtained can be checked and ascertained with very great ease; and thus the farmer has a better opportunity of finding out the exact profit that he makes upon any particular crop.

With regard to the cost of such laying out, this must, of course, depend upon the prior formation of the ground; but my friends, Messrs. John Fowler & Co., will at any time be happy to undertake throwing up the ridges for 1*l.* an acre; and of course the money, whatever it may be, spent in forming these ridges is practically in substitution of the ordinary ploughing that the land must receive,—so that this part of laying out the land may practically be done for the cost of, perhaps, one extra ploughing.

We will suppose, then, that as suitable a district as possible, both with regard to the quality of its soil and the general lie of the land, has been chosen for the application of the sewage of a town, and that the land has been laid out in ridges, as I have described. There remains, then, the question over what area and to what crops to apply the sewage; and, clearly, the area on which it is applied must depend, in some measure, upon the crops selected. One important crop must always be grass; because this is the only crop that is always on the ground, and always more or less in a growing condition. It is the only crop, therefore, to which sewage can be applied more or less usefully on all days in the year; and, wherever any large quantity of sewage is to be disposed of, there is always a population to consume grass, whether in the form of meat, or of dairy produce, or of horse-labour. A very considerable quantity of the sewage of any town can, therefore, always be used in the production of grass, without any danger of overstocking the market. The experience that we have had, both at the Lodge Farm, in the occupation of the Metropolis Sewage Company, and on my own experimental field, shows that sewage is equally applicable to cereal crops as to grass, green crops, and vegetables; but, no doubt, a greater return per acre can be obtained by the production of the latter, because a greater quantity of sewage can be utilized by them than by cereals, and, therefore, it is desirable that the bulk of the sewage should be applied to either grass, green crops, or market-garden vegetables. But, in a case where sewage is carried to a considerable distance from a town, into a purely farming district, experience proves that sewage is quite as applicable to cereal crops as to any other during the periods of the year when it can be so applied; and in the early spring, before the summer green crops are sown, probably sewage may be more usefully applied to winter wheat and oats than to anything else. The third crop of wheat, on the same land, the third year running, can now be seen growing, and apparently very healthy, upon a poor gravel at the Lodge Farm; and this result has been obtained exclusively by the use of sewage, and of a surprisingly small quantity. Last year there was a very fair crop indeed of 5½ quarters to the acre, and the sewage applied was only about 500 tons,—equal, in round numbers, at a penny a ton, to about a couple of guineas; and the first year that we tried sewage upon wheat, it was put to one portion of the same field which looked particularly bad. Two portions of this field were carefully measured, and one was left as it was, and the other was sewaged with about the same quantity of sewage as mentioned before. The result was very remarkable. The unsewaged portion gave 3 loads of straw to the acre, and 3 quarters 5 bushels of grain; the sewaged portion gave, as was naturally to be expected, a large increase of straw, 4½ loads to the acre, or 50 per cent. of increase; and the figures of the grain were still more satisfactory, being inverted—namely, 5 quarters and 3 bushels to the acre.

We should now consider the quantity of sewage per acre which may be usefully applied to crops of grass, roots, and vegetables, to which the main bulk of the sewage must always be applied. With regard to grass, I have frequently had controversies with various persons, including some well-known agriculturists, as to the proper kind of grass to which to apply sewage, and also as to the proper time of sowing the proper quantity of sewage to be applied, and the result to be looked for. Some persons have imagined that sewage can be beneficially applied to ordinary natural grasses year after year, and they cite the Craigentinny meadows at Edinburgh as an example; and cases have been brought to my notice where I myself have been quoted as supporting this notion; but it is an idea which I am altogether opposed to. The water and manure, which together compose sewage, stimulate the growth of all the hardier and ranker kinds of natural grasses to such an extent that in the course of time they choke and kill out all the finer kinds, and the grass becomes the rank, nasty stuff that we see at Craigentinny.

Many persons imagine that sewage cannot be applied to any crop, without positive injury, during hard frosts or snow; but this is not the case. The sewage is always above the freezing point, and more so than ordinary running water. The actual contact with the sewage must, therefore, be beneficial to the plants, in protecting them from cold.

The water supply of London, as proved by the official returns, exceeds thirty gallons per head per diem. This would give upwards of 48 tons of sewage per head in the course of the year; so that, if we take 50 tons as an easy calculation in round numbers for the quantity of sewage per head flowing out of any town, we shall not be very far wrong. In this way 5,000 tons would represent the sewage of 100 persons; so that, as the sewage of 100 persons is the maximum amount that can be properly utilized by a crop of Italian rye grass, and as the rye grass can be grown only once in two years, we should get fifty persons per acre as the maximum proportion of population which is at all safe to apply. But, of course, it never would suit the convenience of any farmer to grow nothing but a never-ending see-saw of Italian rye grass and potatoes.

With regard to other crops, we have grown 52½ tons of mangold wurzel per acre at the Lodge Farm from the application of 1,100 tons of sewage to land which was completely worked out by white crops. Now 1,100 tons would be equal, according to the same rough calculation, to the sewage of only 22 persons per acre; but I do not at all say that this is the proper quantity to apply to such a crop as mangold wurzel.

When I talk of 70 tons per acre as a weight of mangold which ought to be obtained every season by the use of sewage, it is not such an unreasonable thing as it at first appears. And if we apply 2,000 tons per acre to a crop of mangold, it would be equivalent roughly to one acre for every 40 persons; and my own opinion is, that some such proportion should be the very minimum of land which should be laid out for the utilization of the sewage of any town. And it would be greatly for the advantage both of the town and of the farmer if an increased area were put under, at all events, the possibility of irrigation; for, how often would not the farmer, if his land were laid out for it, be only too glad to give an occasional dressing to a crop of wheat that looked sickly after the March storms, to a crop of turnips that he was afraid of losing from the fly, or even to a crop of potatoes in such a summer as we had last year?

And now a few words as to the money value of town sewage. When used for market-garden vegetables its value is exceptionally great, as the vegetables produced are of the finest possible quality; being grown with maximum rapidity, on which the quality of vegetables specially depends. Now it is well known that market-gardeners apply from 10*l.* to 20*l.* worth of solid manure to the acre, around London, at all events; while, to produce the finest crops of cabbages, cauliflowers, or celery, only takes from 500 to 1,000 tons of sewage, according to the particular species of seed used, and the particular age at which it is desired to send the crop to market. Taking, then, the highest of these quantities, or, 1,000 tons, as equal to the lowest value for a garden dressing of ordinary manure, or 10*l.* an acre, we should have a total value of 2,400 pence for 1,000 tons of sewage, or nearly 2½d. per ton; and I have no reason to suppose that this is at all beyond what a market-gardener could afford to pay, having regard to the superior result which he obtains. And it is somewhat curious that this value does not differ very considerably from the only reliable valuation that was ever made of the chemical ingredients in town sewage. To be on the safe side, I have always taken 1d. a ton as the standard price at which the Metropolis Sewage Company should sell the sewage to the farmer; and a very few rough calculations will show that this is a very safe estimate indeed.

To take the case of Italian rye grass. We have seen that 90 to 100 tons of grass ought to be grown from 5,000 tons of sewage in the course of one entire growing season. Now, 5,000 tons at 1d. are equal to 20*l.* 16*s.* 8*d.*, to which we must add, say 4*l.* an acre for rent and taxes; 1*l.* an acre for application of sewage, interest on improvement expenditure, and other small items; the mowing of ten crops a year by machine (for which I may mention the rye grass is particularly suitable) at 3*s.*, 1*l.* 10*s.*; carting 100 tons to the homestead at 6*d.*, 2*l.* 10*s.*; or a total of 29*l.* 16*s.* 8*d.*—say, 30*l.*

If we take such a crop as mangold-wurzel and apply 2,000 tons at 1d., we have a charge for sewage of 8*l.* 6*s.* 8*d.* per acre; taking the same figures of 4*l.* for rent and taxes, and 1*l.* for application of sewage, &c., 30*s.* for cultivation, 10*s.* for seed, 10*s.* for hoeing, and 70*s.* for harvesting 70 tons of roots, we have a total charge of 19*l.* 6*s.* 8*d.* per acre, and taking the same price of 15*s.* per ton for the value of the food obtained, we have a total yield of 52*l.* 10*s.* per acre, or a net balance to the farmer of 33*l.* 3*s.* 4*d.*; and I think you will all agree that, as we have produced 52½ tons of mangold at the Lodge Farm from 1,100 tons of sewage, I am not going too far in reckoning upon 70 tons of mangold from 2,000 tons of sewage.

It may be objected that I am dealing with the sewage of a great city, and not of a small town; but though the rainfall is less in London in proportion to the population, yet the water supply is greater, and the two together give 75 or 80 tons of sewage per head per annum instead of 50; so if this diluted sewage is of the value I have described, surely a sewage equal to only 50 tons per head per annum cannot be worth less. Now, 50 tons at 1d. are equal to 4*s.* 2*d.*; at 2d. 8*s.* 4*d.*; and at 2½d. 10*s.* 5*d.*; so that as the urban population of England, living in towns of 2,000 inhabitants and upwards, exceeds ten millions, and as almost all these towns are duly polluting the rivers in conformity with the "Towns Improvement Act, 1847," they are propagating scarlet fever and typhus at a direct cost to the towns of five millions a year, in addition to the indirect loss to the land and to the working classes; so that we may reckon the loss to the country in gold exported to pay for foreign manure, grain, beef, mutton, hides, wool, bacon, butter, and cheese, at not less than fifteen millions sterling annually.

GENERAL MEETING: INSTITUTE OF BRITISH ARCHITECTS.

THE report of the council read at the annual meeting, on the 3rd inst., showed that the Institute, in regard to the steadily increasing numbers of its members, and the condition of its funds, continues to prosper. The present number of fellows is 264, and of associates 244, making a total of 508. In other classes of membership the numbers are as follow:—13 honorary fellows, 9 honorary members, and 78 honorary and corresponding members, making, with ordinary fellows and associates, a total of 608 members. There are also 10 contributing visitors, 9 students, and 10 temporary students.

We give two or three paragraphs from the report:—

"Several meetings of the Professional Practice Committee have been held to deliberate on important questions, both of a private and public nature. In December last they received a deputation from the London Builders' Society, who were desirous of submitting, for the consideration of the Institute, the details of an arbitration clause proposed to be incorporated with future forms of contract. In the course of the conference many points were raised, which rendered it desirable that the professional relations between architects and builders, as well as between builders and their employers, should be discussed *in extenso*; and, with this object in view, a subcommittee was appointed, who, after collecting from various sources sufficient material for their purpose, will shortly report the result of their labours."

"The Committee for the 'Conservation of Ancient Monuments and Remains' has, happily, had but few instances of threatened destruction or neglect brought before its notice within the last twelve months. It has, however, tendered its advice on some matters of importance, and generally with a satisfactory result. The preservation of the Church of St. Mary Somerset, in Thames-street, one of the works of Sir Christopher Wren, which was proposed to be removed during the recent alterations in the City, may be mentioned as an instance in which the timely intervention of this committee has been successful."

"The question of artistic education for architects, after a lapse of some years, was again revived at the last annual meeting of 1868. It is necessary to explain that, although the consideration of this subject originated with the members of the Institute, it was left, so long ago as 1862, in the hands of a general committee, consisting of members

of various art societies, &c., in which the Institute was only represented by delegates. A meeting of these delegates was therefore held in November, 1868, and the general committee was re-invited to assemble, and has since held several meetings."

"In regard to the library, now comprising what may be fairly described as the most valuable collection of works on architecture in London, the completion, during the past year, of purchases made with the president's donation (by adding about 170 volumes of English and foreign architectural works of great interest and value), has formed an important epoch in the history of the Institute. The supplementary catalogue issued at the beginning of the present year includes all these works, and their arrangement under the headings of 'Author' and 'Subject,' greatly facilitates reference; this catalogue also includes every work added to the library from the session 1865-66 to the end of the session 1867-68."

"The department of architectural drawings, prints, and photographs has not been forgotten. The librarian is now engaged in making a catalogue of this valuable collection, which will soon be conveniently arranged and made accessible to members. Attention is specially directed to a list, about to be reprinted, of works essential in such a library, but still deficient. Among others may be mentioned those required to complete the volumes of Piranesi, and certain editions of Vitruvius."

"The collection of casts possessed by the Institute, and hitherto preserved in one of the basement rooms, has been offered as a loan to, and as such accepted by, the authorities of the Architectural Museum, where they will be more accessible for inspection. The opening of the new buildings of the museum at Westminster is a matter for congratulation, not only to the zealous promoters of that undertaking, but to the profession at large, and the council trust that, while it will undoubtedly prove advantageous to the student, it may also tend, in conjunction with other institutions, to develope public interest, and educate national taste on the subject of architecture, in regard to its artistic as well as its antiquarian aspect."

The balance-sheet showed the sum of 2,382*l.* 8*s.* 3*d.* on the receipt side, and 86*l.* 13*s.* 6*d.* less on the disbursement side. The statement of assets and liabilities showed a balance of 8,318*l.*

The following office-bearers were elected:—

President, Mr. W. Tite, M.P.; vice-presidents, Messrs. C. Barry, Clarke, and T'Anson; honorary secretaries, Mr. Wyatt Papworth (in place of a gentleman proposed by council) and Professor Donaldson (foreign correspondence); ordinary members of council, Messrs. Christian, C. F. Hayward, Edmeston, Marrable, C. C. Nelson, Pearson, Smith; (new names) Blomfield, Currey, C. Fowler, E. W. Godwin, Hakewill, R. J. Johnson (Newcastle-upon-Tyne), Worthington (Manchester), and Bryce, Edinburgh; treasurer, Sir W. R. Farquhar; honorary solicitor, Mr. F. Ouvry.

Mr. Henry Baker was placed on the District Surveyorship Examination Board in lieu of the late Mr. Ashpitel.

SALISBURY CATHEDRAL RESTORATION.

A REPORT from the dean and chapter has been laid before the cathedral restoration committee. The following is an abstract from it:—

"The restoration of the exterior of the cathedral, commenced by the dean and chapter in 1863, and continued since 1864 by the aid of a public subscription, is at length on the eve of completion.

The first operation was to consolidate the foundations with fresh concrete. The stonework was then repaired or renewed; a channel, coated with Portland cement, was carried round the building, and the whole was effectively drained. At the same time the earth, which to the height of between 2 ft. or 3 ft. had been heaped up against the walls, was cleared away. The plinth and base mouldings of the edifice being thus uncovered, its architectural effect has been strikingly improved. The surface of the churchyard has since been lowered to the same level by the dean and chapter, from funds at their own disposal.

On a careful survey of the exterior, it was found that most of the flying buttresses were in a dangerous state. Some of them have been entirely rebuilt, and the rest have been substantially repaired. The finials, pinnacles, parapet copings, and mullions, throughout the building, many of them in a state of dilapidation and decay, have been made good. The decayed shafts, capitals, and bases of the numerous windows have been thoroughly restored. These were originally of Purbeck marble, a material peculiarly liable to decay. It was therefore resolved, by the recommendation of Mr. Scott, to employ in repairing them a variety of the Devonshire marble, as being more durable and less costly than the Purbeck. The juxtaposition of these two kinds of marble, differing as they do in external appearance, offended the eye. In order to soften the contrast a process of rubbing and oiling the surfaces of both is now being employed, under the sanction of Mr. Scott, with a view of assimilating, as nearly as possible, the colour of the new to that of the old material. The result of the experiment has, thus far, been highly satisfactory.

We next come to what was justly considered the most important part of our great work—the strengthening of the tower, and the ensuring thereby the safety of the noble fabric itself. . . . The grand object was to strengthen and consolidate the walls of the lantern, without overloading the piers in the nave. This object has been fully accomplished by means of an ingenious and elaborate system of iron ties, devised by Mr. Shields, the eminent civil engineer, whom Mr. Scott had called in to assist him in this delicate operation."

The interior of the tower having also been restored,—

"Attention was next directed to the west front, every part of which stood lamentably in need of renovation or repair. The stone and marble work throughout have been restored, and the enriched mouldings of the porches, on which a great deal of time and labour has been bestowed, are now far advanced.

The restoration of the west front could not be regarded as complete without an attempt being made to replace a portion, at least, of the statues that anciently adorned it. The late Professor Cockerell has stated that there were originally on the exterior of the cathedral 160 figures, of which 123 stood on the west front. From a minute examination of them it was inferred that the whole series of the west front formed what is termed a *Te Deum* or theological scheme.

In accordance with this was the plan of restoration proposed by Mr. Scott, and by his advice entrusted for execution to a sculptor of rising reputation, Mr. Redfern. The work, begun about two years ago, and still in progress, may be thus briefly described:—In the panel of the great gable of the west front is a colossal figure of our Saviour, seated in majesty. Ranged in successive tiers below this grand central figure there will be in the first tier figures of angels; in the second, of prophets and patriarchs; in the third, of apostles and evangelists; in the fourth and fifth, of saints, martyrs, and founders. It will be observed that in this plan apostles and evangelists are placed below prophets and patriarchs. The remains of two figures, those of St. Peter and St. Paul, proved that this must have been the order in which they originally stood, as, in fact, both the number and distribution of the niches admitted of no other arrangement.

Of the entire number of statues required to fill the niches of the west front, about fifty will soon have been fixed in their places, exclusive of eight ancient mutilated figures which have been restored by Mr. Redfern. For the further prosecution of this portion of the work there are no available funds.

The surplus in the hands of the treasurer may be estimated at 3,000*l.* With so inadequate a sum at our command it would be idle to attempt so costly an undertaking as the entire restoration of the interior. The lady-chapel may be considered the fittest part of the work to be first taken in hand, as the cost of its restoration, according to an estimate approved by Mr. Scott, will not exceed the limits of our resources."

The committee having, at the meeting just held, decided on the restoration of the lady-chapel, that work will be immediately commenced.

From the financial statement appended to the report we learn that the subscriptions for the general and special objects of the restoration, together with the interest, amounted to 16,525*l.* 15*s.* 8*d.*

THE CHAPEL OF ST. JOHN'S COLLEGE, CAMBRIDGE.

THE new chapel was opened on Wednesday last.

St. John's College was originally a hospital for poor and infirm persons, and certain religious brethren under the rule of St. Augustine.

Bishop Balsham, of Ely, in 1280, attempted to add to the old institution a college for scholars on the model of that just then established at Oxford by Walter de Merton. This, however, failing, owing to altercations arising between the members of the old and new foundations, he removed, in 1284, his college to where Peterhouse now stands, and the old hospital of St. John, reverting to its former position, continued unmolested till the reign of Henry VII., when the Lady Margaret, the king's mother, determined to convert it into a college, which was effected under her will by her executor, Bishop Fisher, between the years 1509 and 1516, in which latter year the chapel was re-consecrated. This chapel—a not very decorative building—apparently of the sixteenth century, being found very insufficient for the present demands of the college, it was some few years back determined to rebuild it, and Mr. G. Gilbert Scott was appointed the architect.

Finding the old chapel to be in reality the chapel of the original hospital, and to be a building of the latter portion of the thirteenth century transformed into a sixteenth century structure, the architect proposed, as an alternative scheme to designing the new chapel, that the old one, restored, so far as possible, to its original design, might form an *aisle*. This, however, being considered hardly compatible with the practical uses of a college chapel, was not adopted, and a wholly new chapel was determined on.

The form adopted is one which, though frequent in Oxford, had not hitherto been adopted in Cambridge. It is that in which the antechapel forms a kind of western transept. This happened to be peculiarly suitable to the position of the new chapel; and, as it originated at Oxford in the incomplete cruciform church which forms the chapel of Merton, it may not be inappropriate (though the association was accidental) to a college in the sister University of which the earliest scheme was founded on the model of Merton.

The chapel proper is internally 143 ft. long by 34 ft. wide, and is terminated with an apse of five bays. The antechapel is 78 ft. by 32 ft. The extreme length of chapel from east to west outside is 193 ft. 1 in.; breadth, north to south, 52 ft.; extreme length of ante-chapel from north to south, 89 ft.; breadth, east to west, 50 ft. The exterior height of the chapel is 50 ft. to the top of the parapet, 80 ft. to the ridge of the roof. The tower is 42 ft. square outside; its height is 140 ft. to the top of the parapet, and 163 ft. to the top of the pinnacles.

In the demolition of the "labyrinth," the curious chapel of the Old Hospital of Canons Regular, founded A.D. 1134, to which the college succeeded, was revealed. Its style is the earliest type of Early English. An account of it has been published by Professor C. Cardale Babington. The arches of its piscina have been placed *in memoriam* in the new chapel.

The stalls lately in the old chapel have been transferred to the eastern division of the choir.

The style of architecture adopted is not that of the period of the royal foundress of the college, but that of the age of its intended founder, Bishop Balsham; which is, in point of fact, the precise style of the earlier portions of the old chapel: for, though it is hardly to be supposed that Balsham erected the chapel during the short period of his abortive foundership of the college, 1280-1284, it is, nevertheless, probable that the impulse given by his intentions may have led the authorities of the Hospital of St. John to re-erect their chapel; for the character of the old parts which remain is just that of Balsham's time.

The closest types of the architectural details of the new chapel may be said to be Newstead Abbey, and the nave of Lichfield.

When the design was first made, no tower was contemplated, but only a flèche, at the intersection of the roofs of the chapel and ante-chapel,* but shortly after the commencement an old member of the college, Mr. Henry Hoare, who had laid the cornerstone of the building, made the munificent proposal—contingent on his living long enough to carry it out—to erect a tower similarly placed to that of Merton, at a cost of about 5,000*l.* Mr. Hoare's lamented death, the result of an accident, cut his generous intention short before the work was quite half complete, but the college undertook the perfecting of his undertaking.

Internally the chapel is roofed with an arched ceiling of oak, which has been splendidly decorated by Messrs. Clayton & Bell.

It consists of nineteen bays. In the central bay at the east end is a representation of Our Lord in Majesty. The other eighteen bays contain figures of *illustriores* of the eighteen Christian centuries after the first century, each bay being appropriated to a century. The centuries proceed from east to west: the even centuries on the north side, the odd centuries on the south side.

The known cost of the chapel up to the present date may be roughly stated at 53,000*l.*, not including the cost of the organ or of the painted windows.

The reconstruction of the organ, including the water-blowing apparatus, has involved an expenditure of 1,130*l.* The question of the case is not yet settled.

The painted windows are the gifts of various donors. The five windows of the apse are the gift of the Earl of Powis, High Steward of the University. The great west window is the gift of *Members of the College in statu pupillari*; and cost 1,510*l.*

The six following side windows of the choir of the chapel are ordered at a cost of 276*l.* each.

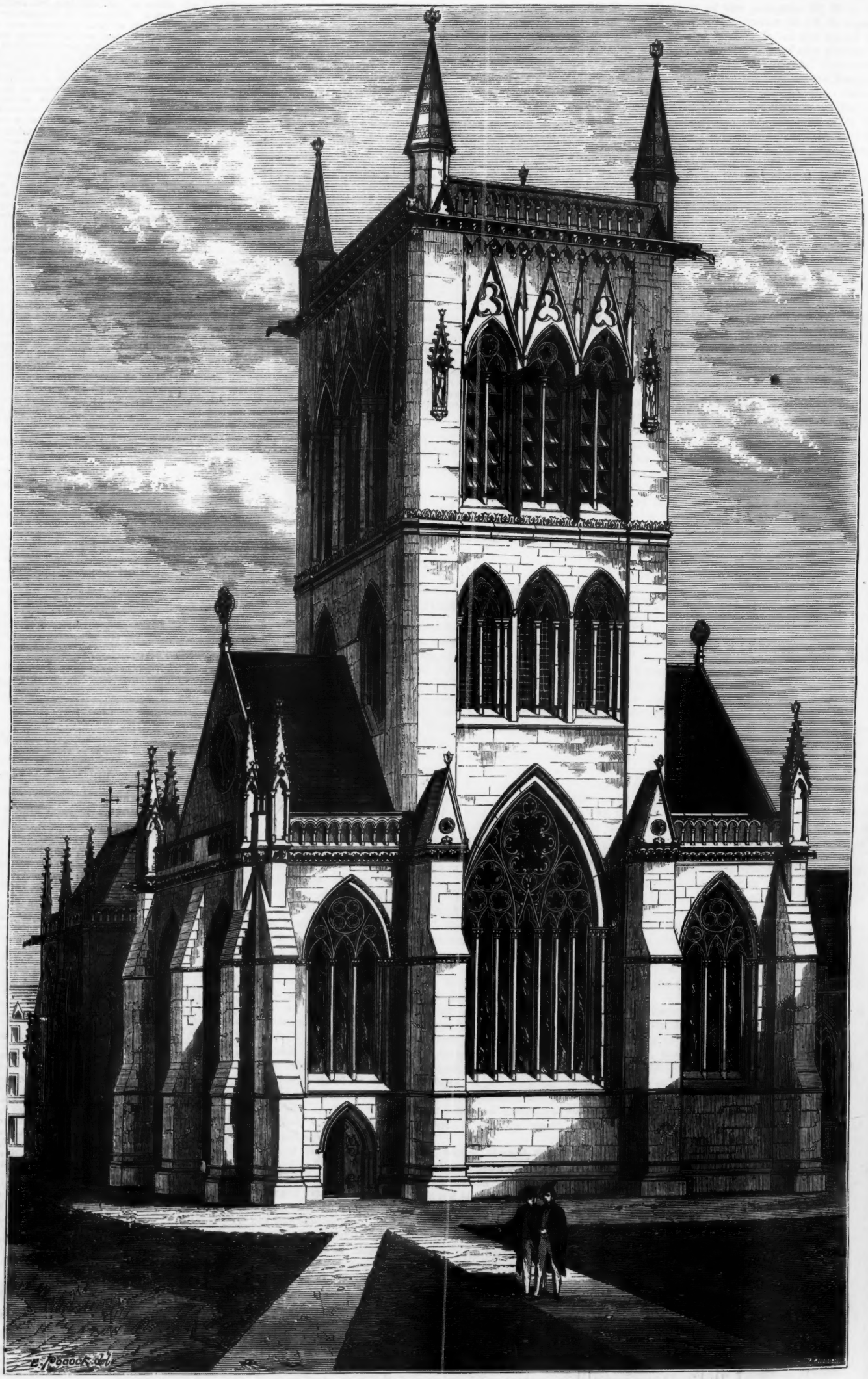
The erection of the chapel has occasioned the erection of a new master's lodge, the extension of the Great Hall, and that of the old gallery of the college—a noble Jacobean apartment, henceforth to be used as the "Combination Room," or withdrawing-room of the fellows.

The following are the names of those who have been concerned in the erection:—contractors, Messrs. Jackson & Shaw, Westminster; stone carvers, Messrs. Farmer & Brindley, London; wood carvers, Messrs. Rattee & Kett, Cambridge; glass painters, of the apse windows, the great west window, and the side windows in the chapel, Messrs. Clayton & Bell, London; of the window in the north transept of the antechapel, in memory of Professor Blunt, Messrs. John Hardman & Co., Birmingham; of the two windows to be placed in the north transept of the antechapel, in memory of Dr. Tatham, late master, Mr. Wailes, Newcastle. Organ-builders, Messrs. William Hill & Son, London; clerk of the works, Mr. W. M. Cooper.

We have no hesitation in placing the interior of this building amongst the most successful achievements of Mr. Scott.

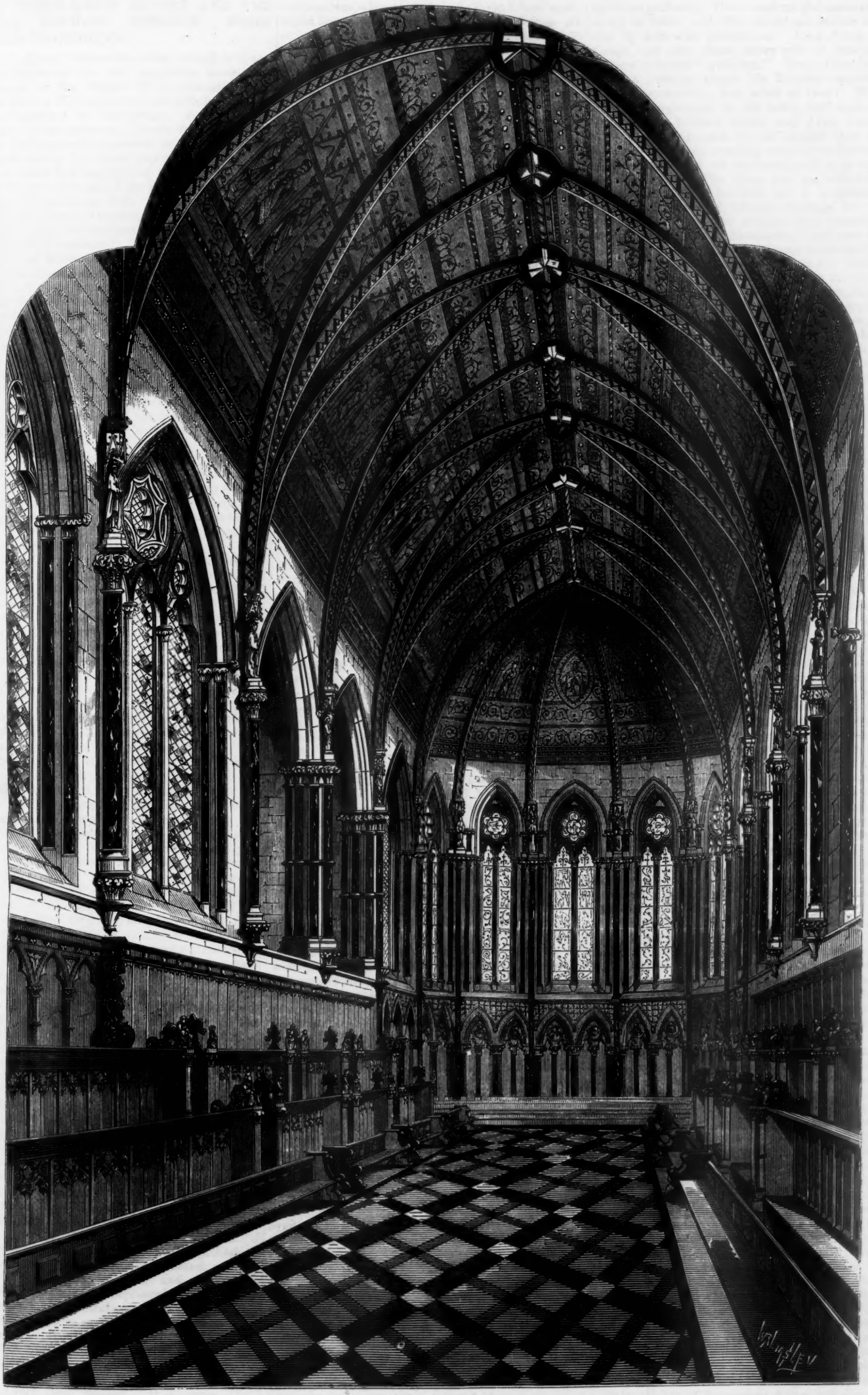
* The design as at first arranged will be found in our vol. xxi. (1863), p. 225. We now give an interior and exterior view of the building as completed.

THE CHAPEL OF ST. JOHN'S COLLEGE, CAMBRIDGE: WEST FRONT.



THE CHAPEL OF ST. JOHN'S COLLEGE, CAMBRIDGE: WEST FRONT.

PROFESSOR G. G. SCOTT, R.A., ARCHITECT.



THE CHAPEL OF ST. JOHN'S COLLEGE, CAMBRIDGE: INTERIOR, LOOKING EAST.

THE TRADE-UNION REPORT AND THE BILL FOUNDED THEREON. WHOM DOES IT CONCERN?

SIR,—Since I addressed a few thoughts to my fellow-workmen on the dangerous tendencies contained in the Report of the Minority Commissioners, a Bill based on these conclusions has been presented to Parliament. Feeling great interest in the question, I have in my rambles about London made inquiries as to the opinions of workmen on the above important matter, and I have found in a majority of cases they did not know of the existence of the Report, or anything of the Trade-Union Bill. And yet we are supposed to live in a reading and thinking age. I therefore could not but ask myself the question, Whom does it concern?

Did I not know that this subject was one of vital importance to both master and man, I should not have troubled you again. It would appear that our country, which has been up to the present time so far ahead of all nations in the industrial arts, had determined to let other nations who are yet young in the race carry away the industrial prize. The apathy of all classes in relation to the trade-union question is a potent sign that Englishmen are oblivious to the consequences which will ensue on the passing of a Bill based on one of the most absurd and inconsistent reports ever presented to Parliament.

The apologists and supporters of trade societies would, if they were able, make them universal, and the Bill is at least a long step in that direction, and if carried in its present form will give power to a class of men who have disregarded liberty and justice when in opposition to their so-called interests.

One of the very strange things in connexion with it is that the promoters and supporters of the Bill class themselves as ardent supporters of civil and religious liberty, and yet offer to the House of Commons a measure to suppress all rights of a large portion of the people. It is high time the working men of this country were taught the true bearing of the labour question, as they now are pursuing the shadow and are fast losing the substance. The report of the minority informs the world that the operations of unions have had no depressing effect upon the trade of this country. In last week's papers I noticed the members of various working men's clubs had been visiting the new St. Thomas's Hospital, and an address was delivered on its special features. I have no doubt as to its being highly interesting, but one explanation appeared to be wanting to clear away the mist which now obscures the working men's industrial vision. In my opinion, no part of the address would have been of greater importance than that relating to foreign industrial competition, as illustrated in the progress of the building,—the ironwork for it is sent from Belgium, and the joinery from Sweden,—and the causes which have led to such results. There is nothing the working men want at present more than plain-speaking; they have been flattered too long, and their eulogists have led them to believe that they are and always will be at the head of the world in manufacturing productiveness, and that the labour of one Englishman is worth that of two or more foreigners. At any rate, an opportunity appeared to have been lost to enforce upon working men the necessity of being cautious in their dealings with capital, and not, like the calf, quarrel with "their feed of hay because it is not clover." The iron trade is, and has been for some long time past, in a depressed state; thousands of moulders and others have been out of employment; and, without some alterations take place, the ironfounders' trade society will not be able much longer to meet the demands upon it. The building trade is certainly not in a flourishing condition. Workmen in that trade have been led to believe there was no limit to their demands if they were well combined; and all they had to do when the society was consolidated, was to knock at the employers' door and receive an advance of wages, and exceptional circumstances have lent aid to that fatal supposition. How often is one obliged to hear from workmen who have never read or thought for a single moment on the causes which affect the rate of wages, or the forces at work to counteract their combinations, that if they were thoroughly united they could do whatever they pleased. It appears that whatever is granted to the demands of the unionists, it is but the prelude to other requirements. In fact, they are looking for the trade millennium, when there is to be eight hours' work, eight hours' play, and 8s. per day. Unions are not defensive but aggressive associations; and, if the destruction of the trade of the country is not aimed at by those who govern, and we do not exactly know what follies they will commit, this we know, they are frittering away valuable time upon a question which involves nothing in comparison with the education of the masses on industrial and economical subjects. Whilst they are quarrelling over the few millions of pounds involved in the disendowing a branch of the national church, the industrial sway is gradually, but surely, slipping away from us, and doctrinaires are proposing schemes to hasten it on, and Government, it is said, will not oppose. It is a fact not to be denied that not only are foreign nations supplying their own wants, but they are outselling us in our home markets, and are extending their forces to other countries. The strides they have made in all branches of industry are far greater than those of England. The Paris Exhibition showed that in most cases they were on a level with us, and where beauty of design was required we were far behind. It is said there are none so blind as those who will not see, and that appears to be the case with the Minority Commissioners, as most of the cases they have cited in support of their theory, and as bearing on production, are fallacious, and not founded on experience, and are still further calculated to mislead those who will not see the practical results of our past industrial policy and example. The glass trade is one chosen as illustrative of the advantages which unions confer. The members of that trade enforce their rules with great strictness, limit apprentices, and boast of how much they yearly pay to their members out of work, apparently thinking they can gauge the wants of the community, regulate the demand, and fix an extra price for their produce: they at once clash with the demands of the public, whose interest is to get their article at a marketable price, and, if not produced here, the trade goes elsewhere. Under trade restriction, the glass trade languishes in this country, and a large part of the glass used is the product of foreigners, whose business is flourishing, and is daily enlarging its borders. I find I have again outrun my intentions, and have not said all I intended at the beginning of this letter; but feeling that this question does concern the nation, and is of vital importance to our good name and commerce; and as I know the readers of the *Builder* are thinkers; I hope a working man's plain-speaking will cause them to perceive the ultimate issue in regard to the above questions.

JACK PLANE.

THE SOCIAL POSITION OF THE PROVINCIAL ARCHITECT.

SIR,—"The social position of the provincial architect" is a most trying one to that generally unfortunate individual. As one of the class, I wish to put upon record a few of my own experiences as some small contribution to the history of architectural revival in this nineteenth century of our Lord. I will pass over my preparation in London for the practice of what I considered the noblest profession, simply stating that I was regularly articled to a gentleman standing high in the profession—a gentleman, too, by birth and education. I had, I believed, made the most of my time: had attended Professor Donaldson's lectures; worked at the Architectural Museum when it found shelter in Cannon-row, Westminster; and had been a student of the Institute. One day in autumn I found myself some two hundred miles from the metropolis, with unlimited funds of hope, some amount of self-complacency, and the very highest opinion of my own calling. From circumstances over which I had no control, I did not set up my carriage; I did not even take the lease of a good-sized professional-looking house, and furnish it with that comfort, combined with elegance, which ought to have at once stamped me as one who could design an edifice possessing those attributes. Thus you will perceive, sir, that I had nothing but my profession to give me any social standing whatever. From the introductions given to me, I was soon thrown amongst well-to-do doctors, lawyers, and country squires, as well as yeomen, and that highly-intelligent class who enlighten their fellows when they sit in solemn council as aldermen. I was not long in discovering that I was looked upon as a queer fish,—neither one thing nor the other: amphibious probably. They could not get me to swim easily in trade, and they would not let me walk side by side with professions. John Jones, the mason, had two years before writ in bold characters on brass "architect." Truly John Jones wrote a peculiar hand: his English was oftentimes questionable; but what of that? There were two architects in the town, and were not their names William Surde and John Jones? Was it to be supposed for an instant that any father claiming any standing would have dreamed of making his son an architect, and only equal to John Jones? The thing was too ridiculous for a dream,—too horrible for a nightmare. Those who professed friendly feelings for me were candid enough to express their wonder at my following such a "business;" and one day whilst dining with an old gentleman he advised me in a most parental manner to give up my "trade" and take to medicine or law as more fitting for a man of any education whatever. I explained that a professor of architecture was no tradesman, that he was as good as any doctor, lawyer, parson, or independent gentleman; that from the nature of his profession his general acquirements were, or should be, greater; that as a rule his education had been as good; that travel should have enlarged his mind, and the study of the ancient monuments enriched it with a knowledge of the most enlightened peoples who had inhabited the globe. All this, however, went for nothing in the face of John Jones being an an architect. Where was his education? Where was his travel lore?—and yet I could not unarchitecturalise him. The fact is, John Jones entirely put out my light socially, not by shining brighter, but by the density of his smoke; and at the present time there is a good deal of the same sort of smoke dimming many another professional light, not necessarily architectural. I fear, sir, we must for some time bear our evils patiently. It certainly is annoying to have to meet John Jones,—to have to listen to the chairman of a committee whilst he calls your attention to matters of detail in your plans which John Jones declares are mistakes; that your roof will not stand, because the tie-beam is not of sufficient scantling to keep up the king-post; that this beam does not require trussing, and that that chimney will not draw because it is too high. It is even worse if you are a young man, and happen to attend the hunt or Infirmary ball, to be coldly informed by Dr. Femur's pretty daughter that "Thanks; I'm quite full," and then to see that snob, Quillet, the conveyancer, lead her off in triumph. What use is it that you can talk Blacklows, the curate's, head off when his social status is looked upon as so superior to yours by both the wife and daughters of William Bobbin, esq., that you cannot get listened to. Besides, it is dangerous for a man who is so looked upon to show that he knows more than he is given credit for. Such a course ensures a certain amount of snubbing.

There are many arguments, no doubt, which might be used to prove that architects are no worse off than painters or sculptors; that they have no right to wish to take higher ground than either. Undoubtedly any one can call himself a painter or sculptor as easily as he can an architect; yet we do not hear any cry out from either of those professions, whereas it is a well-known fact that few men are so illiterate as a body—few men more egotistical. The reason is clear enough. Painters and sculptors have not to meet their patrons face to face as architects have; they fly at high game, fame and future, or obscurity and death; they choose to live in a world of their own, and they can do so—an architect cannot. He can no more live without seeing his client than a surgeon can perform an amputation without seeing his patient; hence the necessity of social intercourse, and hence his feeling of humiliation when treated otherwise than as a member of society whose acquirements entitle him to those amenities so readily accorded to the three acknowledged professions. I have found that it is only amongst certain classes that architects are looked upon as socially inferior to men who have chosen physic, law, or the Church; that class who really are able to give good commissions—the aristocracy,—those of the public who are better acquainted with the nobility of our calling than any other section, never behave otherwise than courteously, do full honour to our art and to us. Knowing this, we can either go on our way rejoicing, careless of the little slights of ignorance, doing our duty, and proving ourselves inferior to none by behaving like gentlemen, or we must firmly close our doors, diplomas must be granted, and

granted only after such a course of training as will convince the public that there is more in architecture than a name. But we cannot blame the public for the non-appreciation of a thing of which they know nothing. We must look upon ourselves as a small army who have flocked to the standard of a fair but unknown virgin. We have sworn to uphold her fame and to prove her fair, and we have chosen no easy task. We are often looked upon as simple enthusiasts, a sort of rabble without generals. Our leading men, except to a few initiated, are unknown, whereas a galaxy of famous and world-renowned men dazzles in any other profession. In time, and as we become a wealthy and striving portion of the community, our influence will be felt. When the wills of our most successful brethren shall have been proved at not less than six figures, as I have no doubt they will be, the moral influence in this money-getting country will be soon apparent. Most of us at present are looked upon as needy and seedy; but go to any town you like, be the population three thousand or three hundred thousand, you will find one or more wealthy men who have made their fortune by their profession. In how many towns do you find architects similarly situated. This sets me a-moralizing: so I leave the continuance of the thought to others, and will close this by saying that, as a profession, we owe you, sir, much. The high character of the *Builder*, its wide circulation, and its readiness at all times to advance our just claims, have had great and due weight with the reading and learned community, and no doubt its usefulness to us will continue to increase, and thereby elevate our "social position." B. M.

THE FUTURE OF BRICKWORK.

I HAVE read with much interest the article in your last impression of the *Builder* on "The Future of Brickwork," and am fully impressed with the idea that a new era is dawning with regard to the internal and external decoration of buildings. I believe the time is not far distant when glazed surfaces in a rich variety of colours will supersede the present mode of "daubing" with cement and stucco, which not only in many instances offends the eye, but has to be renewed periodically, like a cast-off garment. I am further convinced of this from the fact that an indestructible glazed surface can at the present time be produced on bricks, in various tints, made of common red clay. I have myself been experimenting for several years with the various red and fire clays of England and Scotland, and have produced a durable red, black, white, blue, green, and yellow, which I have laid on the bricks in the clay state, by which means I save the cost of twice burning. I may also say, that the expense of producing bricks by this process will not exceed 10s. per 1,000 over the cost of ordinary pressed bricks. Doubtless others have been, and are now, experimenting in a similar way, which will probably lead to a complete revolution in the decoration of public and private buildings. The great point to be attained is to produce a glazed surface of varied colours on the same material at a price which will compete with the present mode of embellishment. When that is accomplished, I believe architects will only require to see it in order to adopt it universally.

ALPHA.

THE IMPERIAL GAS COMPANY'S BILL.

THE Metropolitan Board of Works, in a "Statement of the Course taken by the Board with regard to the Imperial Gas Company's Bill now before Parliament," after pointing out the objections stated on their behalf, and the amendments urged in committee on the Bill, go on to say:—

"The committee, however, found the preamble of the Bill proved, and at the same time intimated the extent to which they were prepared to amend the Bill, viz.,—to reduce the price to 3s. 9d. after the 1st January, 1871, making no alteration in the illuminating power; to limit the dividend on the additional ordinary share capital to 7 per cent., and on the preference capital to 6 per cent.; and to strike out of the Bill the power to purchase or take on lease coal-mines and collieries.

On the committee declaring the preamble proved, and also adopting the somewhat unusual course of adding to it the express alterations which they intended to make in the clauses, and those amendments not comprising a public audit, an independent testing of gas, and proper provisions as to reserved fund and other important principles, it was obvious that the Board would have to present their views to the House of Lords; and, consistently with ordinary practice and prudence, it was important not to prejudice any step in the House of Lords by accepting a portion only of the required clauses in the House of Commons, but to seek the insertion of what might be necessary in the House of Lords, where the whole question of preamble and clauses would be open. And the Board at once gave directions for a petition to the House of Lords, and this took place before the debate in the House of Commons on Wednesday last.

The Bill having now been referred back to the committee by the House of Commons, the Board propose to appear before them again by counsel, to urge the same points as before, viz.,—the expediency and necessity of applying to the Imperial Gas Company the terms and conditions imposed by the Act of last session on the companies supplying the City; and the Board earnestly trust that the result will be such as will be acceptable to the consumers."

It is earnestly to be hoped that the Imperial Gas Company will be compelled to improve their gas. The quality of it has long been disgraceful, and such as this Company would not have dared to impose upon the public by charging for at the rate they do had there been any actual competition. Even the Company must have been ashamed of it, for when their Bill came to be under consideration they immensely improved its quality, as if by this flash process they expected to blind the eyes of the gas-consumers, or the committee on their Bill, to their past misconduct, and ensure a clear way for its future continuance. To present the public with infamous gaslight such as theirs, at the price they charge, is little short of obtaining money under false pretences.

THE ARCHITECTURAL ASSOCIATION'S VISITS.

THE works selected for the out-door practical lessons which have been wisely established as features by the Architectural Association have been from time to time noticed in the *Builder*. On Saturday last the new bridge at Blackfriars and the Holborn Viaduct were chosen, and were visited by a party of between fifty and sixty members, including some well-known names. They were received at Blackfriars Bridge by Mr. F. W. Bryant, the resident engineer, and after inspecting the drawings, were shown over the works. The bridge, as our readers know, is of iron, resting on piers of solid masonry, and crosses the river in five spans, the centre one of which has an opening of 185 ft., with a height of 25 ft. above high water level. Its length is 1,280 ft., and its total width is 75 ft., the roadway being 45 ft., and the two pavements each 15 ft. wide. It is expected to be ready for public use some time in August. We have so lately given particulars that repetition is unnecessary.*

After tendering their acknowledgments to Mr. Bryant, the party proceeded to the Holborn Viaduct. As this also has been so recently fully described in the *Builder* (see p. 320, *ante*), we will only remark that considerable time was spent, under guidance of Mr. Blashill, in viewing the subways and other practical features of this interesting work, and that the party separated at a late hour in the afternoon much pleased with the time so profitably employed. Since our last visit rapid progress has been made, and pipes are now being laid for the use of the Pneumatic Despatch Company beneath the viaduct. A new parsonage-house for the parish of St. Andrew, Holborn, is about to be commenced, Mr. Teulon acting as architect. This will stand close to the present church, and the site is now being prepared.

* See p. 163, *ante*.

THE SEWAGE QUESTION.

Eton.—The Eton Local Board of Health have determined to adopt the report and plan of Messrs. Ripley & Simonds, civil engineers, for the drainage of Eton College and town. The system adopted is the separate one, with the purchase of land for sewage utilization and irrigation. The cost is estimated at 8,000*l.*

Merthyr.—The town of Merthyr Tydfil has fallen into the same difficulty which has entailed so much anxiety and expense to the local authorities of Cheltenham, Leamington, and other English towns—namely, not knowing what to do with its sewage. The Local Board of Health having expended 30,000*l.* in draining the town, discharged the sewage into the River Taff, but a Chancery suit was commenced against them by Mr. Nixon, a coal owner, and an *ad interim* injunction was granted to restrain them from discharging into the river. The suit is still proceeding, and the board have been discussing various schemes for getting over the difficulty. The valley at the point where the sewer discharges is so narrow that not a quarter of the area of land necessary to receive the whole of the sewage is obtainable. Another scheme has been devised by the board's engineer, and adopted, which is, to continue the main sewer some seven miles further down the valley, to a point 4 miles above Pontypridd, where it widens considerably. Here there is a large tract of common land suitable for the purposes of irrigation, and which may be acquired on easy terms. About 400 acres will be required for the effective disposal of all the sewage of the town, and the cost of continuing the main conduit to this land, and preparing it for the sewage, is estimated at 20,000*l.*; but, on the other hand, it is calculated, from what has been done in other districts, that in the course of a short period the soil will have been so much improved by the application of sewage as to command good tenants at rents that will cover the outlay.

Stroud.—Mr. J. H. Groome, of Earl Soham, says, in a letter to the *Suffolk Chronicle*,—"My pastures, manured with 5 cwt. per acre of the Stroud sewage grass manure — a compound manure—of which the deposit obtained by the now well-known Stroud process is the basis, fully come up to their condition after like treatment in 1865 and 1866, and the experiment made in 1868, viz., laying down half an acre of land in permanent pasture, with the same amount per acre of the same manure and no other, is this spring quite as successful in its continuous growth as it was last autumn. The sewage of towns, treated by the process in use at Stroud, will be a cheap source of that which all farmers want—a really *good grass manure*."

PAVEMENT AND SLATE IN SCOTLAND.*

A SERIES of able and useful papers appeared, not long ago, in the weekly *Scotsman* newspaper, and we quoted from them at some length while they were in course of issue. They now form a goodly volume of about 500 pages, treating of coal-mines, the manufacture of iron and iron manufactures, shipbuilding, railways, plate and jewelry, manufactures in metals; woollen, cotton, linen, and jute manufactures; dyeing, sewed muslin manufactures, fishing-nets, paper and paper-hangings, floorcloth, leather, india-rubber, glass and earthenware, granite, freestone, pavement, and slate quarrying, brewing, distilling, sugar-refining, confectionary, preserved provisions, mineral oils and paraffine, printing and publishing, and fisheries. The volume is valuable.

We shall glean a few particulars from the paper on pavement and slate.

The pavement quarries of Caithness are of considerable extent and importance, and their produce has a world-wide reputation. The working of the quarries and the dressing of the stones constitute a considerable part of the industry of the county, employing more persons than any other kind of trade, exclusive of agriculture and fishing.

The Caithness flagstones belong to the middle formation of the Old Red Sandstone. Great numbers of fossil fish and plants are found intercalated among the flag-beds of commerce, having been buried in the ancient mud of the Old Red waters. These fossils appear on almost every slab of Caithness pavement, but although the fish remains lie by thousands, it is seldom that anything like a perfect specimen is got. However, they are beautiful in their ruin—their blackened, enamelled, and glistening scales and plates standing out in contrast with the sober grey of the matrix. The flag-beds have suffered much in geological ages from dislocations by "faults" and other causes.

Sir Roderick Murchison says,—"The peculiar tenacity and durability of the flag-stones is due to the manner in which silica and alumina are cemented together by certain proportions of calcareous and bituminous (organic) matter."

As a proof of the durability of the Caithness pavement, a circumstance which occurred a few years ago is mentioned. A fire broke out in a building in Leith Walk, Edinburgh, and the hose for the engines was laid across the road. The ordinary traffic line being thus impeded, the cabs, carts, and wagons, some of the latter heavily laden, took to the footway, and the consequence was that for nearly 200 yards the sandstone flags—from the north of England and other places—were broken under the unusual weight, whereas a portion, several feet in width,

* "The Industries of Scotland," by David Bremner. Edinburgh: A. & C. Black. 1869.

of the same road, laid with Caithness flags, bore all the traffic without being injured.

The principal pavement quarries in the county are situated on a line extending from the parish of Olrig, on the shores of the Pentland Firth, to the parish of Reay, in the west—a distance of ten or twelve miles. Another run of pavement commences at the seaside four miles south from Wick, and extends westward to the parish of Halkirk, in the centre of the county. The first exportation of pavement was made from quarries on the Crown lands of Scrabster, formerly belonging to the bishopric of Caithness, and situated near Thurso.

The principal flagstone quarries in Caithness are those of Castlehill, which are worked by the proprietor, Mr. Traill, M.P., under the management of Mr. M'Beath, who has been in charge for nearly forty years. Although these quarries are the most important in the county, they are not the oldest.

The pavement quarries have had a marked effect on the wages of the labouring classes in Caithness, which have risen from 7s. or 8s. a week to from 12s. to 18s. There are no statistics of the quantities of pavement exported annually from Caithness, but it is roughly estimated that from 500,000 to 600,000 superficial yards are shipped every year, the value of which is from 70,000*l.* to 80,000*l.*

The date at which slate for covering houses came into use in Scotland is not known, but there is good reason for believing that it was at least three centuries ago. Though slate suitable for roofing purposes exists in various localities, the earliest used would appear to have been derived from the island of Easdale, which for upwards of 200 years has been one of the chief sources of supply. It is stated that among the ruins of a castle in the north of Scotland, which was built in the fifteenth century, fragments of slate similar to that obtained at Easdale were discovered. There is evidence that the Falconer's Castle at Appin was in 1631 roofed with Easdale slates. Ardmaddy Castle, a seat of the Earl of Breadalbane, built in 1676, was covered with slates of the same kind. In the latter case they were fastened with wooden pegs, and have withstood the tempests of nearly two centuries without requiring to be replaced. Of greater extent than the Easdale quarries, and of equal fame, though some years younger, are those of Ballachulish. The other slate quarries in Scotland are not of much account.

Easdale forms one of the group of small islands which skirt the coast of Argyle between Crinan and Oban, and lies close to the south-west point of the island of Seil.

Mr. John White, who was manager of the Easdale quarries for upwards of twenty years, gives an account of the disposal and character of the slate. He says:—

"The slate-bands appear in two seams, which are much contorted throughout the whole extent of the island. These seams are made up of different beds, ranging in thickness from a few inches to many feet, like our sandstones and limestones, but frequently so closely united that only a practised eye can detect a line of contact; whilst the superinduced phenomenon of cleavage constitutes a distinct dissimilarity between them and the other rocks referred to. It may be noticed, as an indication of the sedimentary character of these slate rocks, that there is a decided difference in the quality of the upper and lower portions of the thicker beds, the former being fine grained and smooth, and the latter coarse and gritty—the feature which we recognise as analogous to that exhibited by other rocks of sedimentary origin."

The slate-seams extend across the channel, 150 yards in width, which separates Easdale from Seil, and crop up on the shore of the latter island, where they are worked at two points, known locally as the Ellenabeich Quarries.

The principal quarry at Ellenabeich is about 450 ft. in length, 250 ft. in width, and 160 ft. in depth. The Windmill Quarry in Easdale is 250 ft. in length and breadth, and 120 ft. in depth. Two powerful steam-engines are employed for raising the material and keeping the quarries clear of water. About 300 men and boys are employed. The number of slates turned out annually cannot be less than from 7,000,000 to 9,000,000; the average from 1842 to 1861 was 7,000,000. Taking the value of the slates at the quarries to be 2*l.* a thousand, the total produce will, according to the lowest computation, be worth about 14,000*l.* a year. The slates are well known in the market, and command a ready sale—it being no uncommon thing to find above a dozen vessels, of an aggregate burthen of over 1,500 tons, waiting their turn for loading.

The Ballachulish slate quarries are situated in the north of Argyleshire, on the shores of Loch Leven, about two or three miles from the scene of the tragic massacre of Glencoe. There are two quarries about half a mile apart. The slates are divided into four classes—viz., "duchess," "countess," "sizable," and "undersized." The first-mentioned are the largest, being 24 in. long by 12 in. broad; while the "countess" slates are 20 in. by 10 in. The other two classes are smaller. The number of men and boys employed is about 400, and 15,000,000 slates are turned out annually.

There are also slate quarries at Dunkeld, Luss, Aberfoyle, and Craiglea. Those of Craiglea are the most important. They are situated on the Logiealmond estate (the property of the Earl of Mansfield), and are about fourteen miles north-west from Perth. Under the skilful management of Mr. John White, who was manager of the Easdale Quarries, they are being opened up on an extensive scale. The slate vein is of excellent quality, and has this peculiarity, that, while one portion of it supplies slates of a dark-blue colour, those obtained from the other portion are of a sea-green hue; but otherwise there is no appreciable difference between them.

CHURCH DECORATION.

ST. OLAVE'S CHURCH, Marygate, York, has been re-opened, after partial decoration. A design was prepared by Mr. J. W. Knowles, mural decorator, by whom the work has been carried out. Around the east window two borders have been painted, one on the face of the wall, and the other in a deep hollow which runs around the outer edge of the window. The former is composed of leaves and flowers alternately, buff and gold, on a sage-green ground, and the latter is of a pointed design, having one side brown and the reverse buff for a ground, and on which the pattern is red and grey. The wall space on each side of the window, as high as the cuspings of the lights, is covered with a quatrefoil diaper of sage-green, filled in with foliated crosses in red, and six pointed stars in gold. Across the top of this diaper work is a crested border of buff and gold on a deep red ground, and at the base a foliated one in buff and brown on a gold ground. The portion of the wall above this diaper is powdered with roses in red. Under the reredos is a diaper composed of lozenges of scarlet on a green ground, each lozenge being alternately covered with gold and pink *fleur-de-lis*, and the cresting at the top of the reredos is picked out in gold. The wall all round the church is painted 6 ft. high of a dull red, with an ornamental border, and the top edge of green leaves, divided at intervals by gold Maltese crosses and grey flowers. One side of a pillar (the rest of which are at present painted stone colour) has been decorated, and it has been proposed to extend this additional embellishment to the whole of the pillars at a future time.

THE TRADES MOVEMENT.

Trade Unions Bill.—At a recent meeting of the trades' delegates it was resolved that a large public meeting should be held in June, to give an opportunity to the operatives and others for a full discussion and declaration of opinion on this question. A petition to the House of Commons on the question of trade-unions has also been agreed to, disclaiming any desire for a relaxation of the criminal laws, while urging the need of legislation to give proper status to their societies.

Wolverhampton.—This town is now numbered amongst those—nearly thirty in all—where the stonemasons are on strike. The conditions to which they object are payment by the hour instead of by the week (though they are the only class of men employed by Wolverhampton builders who are not already paid by the hour) the use of stone ready worked, and arbitration for the settlement of disputes between masters and men. The labourers have given notice of a demand for a rise in wages of ½d. per hour, which would make 4½d., their present pay being 4d. per hour. The masters refuse to grant the request, but both parties have agreed to arbitration. The relations between masters and men in the other branches of the trade are of an amicable character.

Manchester.—The board of arbitration being divided as to the disputes between the carpenters and joiners and their employers, Mr. Kettle, as umpire, decided;—"That the wages of carpenters and joiners, of fair average skill, shall be from the 1st of May, 1869, to 1st May, 1870, $7\frac{1}{16}$d. per hour, excepting for men working upon unprotected buildings, under rule 3; and carpenters and joiners working under that rule shall be paid 7¾d. per hour, from the 20th October, 1869, to 20th February, 1870." Mr. Kettle decided against the application of the men for a reduction of the hours of labour. Between 600 and 700 unionist plasterers were to cease work on Saturday.

Bolton.—Mr. S. Pope, recorder, has consented to act as arbitrator between the master joiners and the men in their dispute. The masons, to the number of about 150, are still out.

Sheffield.—A meeting of the Master Carpenters' and Joiners' Association has been held, and the following resolution was unanimously passed:—

"That the members of this Association still adhere to the notice given to the operative carpenters and joiners to pay by the hour for the future."

A meeting of the master builders was also held, Mr. Rodley in the chair. It was stated that there were 27 bricklayers, 136 masons, and 70 labourers who had refused to continue at work on the hour system. The meeting unanimously resolved to adhere to the hour system, believing it to be alike advantageous to the men and masters. As the men would really gain an advance of wages, the masters would be spared a great amount of inconvenience, and the wishes of the general public would be met by substituting the hour for the day system. There are two other grievances the masters are desirous of having redressed. At present worked stone is not allowed to be brought into the town. The masters wish to be able to have stone worked at the quarry or where it is going to be used, and either by hand or by machine at their pleasure. In the carpenters' and joiners' trade the men will take piecework from their masters; in the masons' and bricklayers' trade they will not, and the masters wish this anomaly to be done away with. They are, however, quite willing to have all the points in dispute settled by an arbitration, if the men will consent to that course being adopted.

Bradford.—The unionists locked out have held a meeting to consider their position. Pleasure was expressed that the number of masons locked out was only 139, and not 250, as had been supposed. It was also stated that thirty-four masters, three of whom were connected with the association, will, as well as others whose names were not given, continue to employ their men as hitherto, regardless of the notice given by the Masters' Association, on the ground that the contracts they have in hand will not permit their doing otherwise without incurring serious inconvenience and loss. These masters, it was said, were at present employing no fewer than 800 masons, while the associated masters do not on an average employ more than twelve men each, and at the present time in the aggregate are employing only 139. From these alleged facts it was contended that the lock-out would not be of long continuance.

Glasgow.—The operative house-painters have struck for an advance of wages, from 6d. to 6½d. per hour, to commence on the 3rd of May. The ship-painters have made a similar request.

Crieff.—Some time ago, the operative masons of Crieff intimated to their employers that, on and after the 1st of May, they would work only nine hours a day. It seems that none of the masters replied to the request made, but at five o'clock the men dropped work, having completed nine hours. The result of the demand made was, that all the journeymen working at the Hydropathic establishment, and other large jobs in Broich-terrace, were paid their wages and "locked out;" but the dispute has terminated much sooner than was anticipated. It seems that according to the union rules the men acted irregularly in regard to the nine hours movement, which, together with the determination of the masters to resist the demand, brought the dispute to a close. All the journeymen resumed work on the old terms.

Kirkcaldy.—The masons, who have for some time past been engaged upon several large buildings in town and neighbourhood, have left off working. The rate of wages of late has been 5½d. per hour; the demand is now 6d. per hour. Employers have refused this. The proprietors of several of the large buildings which have been in progress are not in present circumstances inclined to push the contractors, so that there is little hope of the demand being speedily

granted. This movement on the part of the masons is also affecting very materially a number of labourers, joiners, plasterers, slaters, and others.

RUSSIAN, &c., GREAT BELLS.

SIR,—Mr. Walesby, in his interesting notice of Moscow bells, from Dr. Lyell, has omitted to mention the largest bell *now in use:* and mounted high up in the (Kremlin) Tower of *Ivan Velikii*, about 300 ft. high.

This is called the *Bolshoi* (Great) as the other is, the *Tsar* (Royal) *Kolobol.* To the best of my recollection it weighs about 125,000 lb. English, and was *re*-cast about 1820, not many years after the wretched French retreat. (Is the asserted local "chime" to which the words "Those Evening Bells," &c., were adapted above forty years ago, forgotten?) There are many other bells in that tower; one of them called the *Semisotnoi*, weighing, if my memory serves me, about 27,000 lb., but the smallest except two or three.

In a penny publication I lately read of two large "turret bells" at *Cologne* Cathedral, giving their "Bourdon" at funerals, as for Royal ones; at *Notre Dame;* weighing "two hundred and twenty cwt." This is, I presume, the united weight; and, if about equal, each would be a trifle heavier than our "St. Paul's."

Can any one guess the weight of the former "*Six*" (in the time of Aldrich) great bells at *Christchurch*, Oxford, brought from Oseney Abbey; to hear which chimed, it is said, foreigners had come down expressly from London?

Also, could Mr. W., as an accomplished campanologist, give us any cause for *five* being much the most accustomed (unless for small churches) or "orthodox" number before the Reformation? Almost the only instance of *eight* I have met with was in the "inventory" (of "goods") of *Tewkesbury* Abbey.

J. D. PARRY.

TECHNICAL EDUCATION.

THE first annual meeting in connexion with the Manchester and Salford Building Trades Institute for Technical Instruction, which was established about twelve months since by the Amalgamated Society of Carpenters and Joiners, was held on Tuesday evening last in John's Schools, Gartside-street. Mr. Isaac Holden, architect, presided.

The Chairman, in the course of his opening remarks, said that technical education at the present time was very different from what it was at the time when the axe only was used in the forest. Men had now to produce highly ornamental structures, not only in form and character, but they required skilful arrangement in order to give them strength and security. Technical education, therefore, became of the utmost importance to every artisan. Men pursued this knowledge not only for their own benefit, but for the benefit of their employers. Skilful mechanics were always in demand, and it was well that men should bear that in mind. He was pleased to find that this institution had been originated by the working men themselves; and if they continued to work together they would form not only a powerful body of men of intelligence and ability, but a body of men capable of controlling their own destinies.

The number of members for the past year has averaged 62 per quarter.

THE ROYAL ACADEMY, BURLINGTON HOUSE.

SIR,—On reading your description of Mr. Sydney Smirke's clever and well-arranged building of the new Royal Academy, it is to be regretted that, as shown by the plan, though there was a room assigned solely for architecture, the architects now should be deprived of that boon, by having it appropriated to painting, although the painters have already the lion's share of the exhibition rooms. If the lecture-hall is for the future to be appropriated to architecture during the exhibition, I would ask whether the platforms could not be made moveable, as in the old Academy rooms and other buildings, as there is so much stowage room in the basement, and the architects would then have fair play?

A SUBSCRIBER.

GOOD DINNERS.

Royal Literary Fund.—The dinner in aid of this important corporation, which took place at Willis's Rooms on the 5th instant, under the presidency of Lord Stanley, was a brilliant affair. About 170 gentlemen sat down, and 60 ladies occupied settees at the end of the room. Lord Stanley pronounced a warm eulogium on the institution. The Hon. W. Egerton, M.P., Sir John Burgoyne, Capt. Sherrard Osborne, Viscount Stratford de Redcliffe, Mr. Reverdy Johnson, Lord Justice Giffard, Mr. A. Trollope, Sir John Simeon, Professor Blackie, and others, spoke. Mr. Godwin, as a member of the committee, announced that the donations amounted to about 980*l.*; and the Chairman informed the meeting that the late Mr. Brown, a member of the great publishing firm of Longmans, had bequeathed to the fund a sum of 3,000*l.*, being, with a single exception—that of the Newton bequest sixty years ago—the largest contribution ever made by a private individual.

The Artists' General Benevolent Fund.—The dinner on Saturday evening last, presided over by Lord John Manners, was a great success. About 180 persons sat down, and Mr. Hardwick, as treasurer, announced that the subscriptions amounted to over 1,500*l.* Mr. Millais, R.A., the new honorary secretary, had evidently worked well. The speakers, in addition to the chairman, were Sir Francis Grant, A.R.A., General Wood, Mr. A. Trollope, Mr. Frederick Tayler, Mr. O'Neil, Lord Malmsbury, Mr. Godwin, Sir Coutts Lindsay, Mr. Marcus Stone, and others. We understand the committee are offered a building for the reception and education of the children of artists. Unless to a considerable extent endowed, they should deliberate well before accepting it.

KIDDERMINSTER INFIRMARY COMPETITION.

THE committee have held a meeting to reconsider a resolution passed on the 23rd of December, limiting the sum to be expended on the building to 4,000*l.*, "with a view of rescinding the same, and of granting enlarged powers to your committee, this sum being found quite inadequate to meet the estimated cost of the approved plan, combining, as it does, all the requirements of the honorary surgeons."

In consequence of this a correspondent justly writes:—

"As the author of one of the rejected designs in the late competition for this building, I cannot allow this additional call to be made upon the subscribers without entering my protest against the action of the committee in having chosen, from out of eighteen designs, one which it was easily to be seen would cost 40 per cent. more than the sum to which competitors were restricted, viz., 4,000*l.* I made a careful survey of the whole of the drawings whilst they were on view in the Corn Exchange, and, therefore, I have no hesitation in stating that there were three (or more) designs there, either of which was more in conformity with the 'Instructions' issued by the committee, than the selected one is, and that either of them could be erected for 1,000*l.* less than it can be. Had the committee taken the advice of an independent professional man, and acted upon it, I feel sure that the competition would have been decided more by merit and less by personal friendship, and that those gentlemen whose designs were returned to them *carriage to pay*, would have had the consolation of feeling that, at least, fair play had been awarded them."

THE PICTURES AT THE ACADEMY.

SIR,—Is it possible that no better plan can be devised for hanging the pictures at the Royal Academy than the barbarous one of driving into the walls the large and unsightly nails visible in every direction?

The damage to the frames in several instances is perfectly apparent, and the state of the walls after a few years of such honeycombing is very easily imagined. Is it no one's business, moreover, to give the glasses a clean after the pictures are hung?

I cannot help thinking that, now the pictures are all hung a fair distance from the floor-line, a protecting bar, which would not interfere at all with the view, is very desirable, to keep the visitors a reasonable distance from the walls. In more than one instance, during my visit, I saw an individual, without the slightest compunction, pass in a crowded corner between the crowd and the pictures, brushing his shoulders right against the painted surface, and, I should imagine, by no means improving it.

B.

CONDITION OF WATER.

SIR,—In "W. R.'s" communication, which appeared in your edition of May 1, on this subject, he states, "it is not these salts, *per se*, which cause disease, but rather that their presence and derivation are indicative of some latent and subtle power, the nature of which we know not, but whose property is to generate and propagate certain forms of sickness when taken into the system." If this be the case, I presume it would be practicable to remove the indicative salts from impure water, at least temporarily, and still to leave the latent and subtle power, which is the real cause of sickness. Therefore, a system of filtration may be adopted which removes the *indications* of impurity, but leaves this "unknown power" to work its mischief the more subtly. Such a theory cannot but fill with apprehension the minds of those whose domestic water-supply is obtained from a river contaminated by the sewage of several towns whose collective inhabitants number more than 100,000, and by the refuse of a great number of worsted-mills.

Obtaining filtered water from such a source is, I hope, sufficient apology for tendering these remarks, and calling attention to "W. R.'s" theory.

X. S.

A BUILDER'S COMPLAINT.

SIR,—Permit me through your valuable paper to call the attention of builders and contractors to an increasing evil which is damaging to the interests of both builders and architects. The evil to which I allude, is that of building materials—merchants who are frequently supplying bricks, sand, lime, ballasts, timber, &c., to persons not in the trade as builders, at prices as low and sometimes lower than to builders, the effect of which is, that many gentlemen who require buildings erected, get hold of a builder's foreman or ex-clerk of works, who may be able to draw a little, and thus with his assistance get out their own plans, employ their own workmen, purchase their own materials, and under a false impression of effecting a saving of money, dispense with the services of both architect and builder; and this is traceable to the temptation offered of cheap materials; and what is worse, in most instances when the building is completed, the proprietors think they have effected a large saving, and though it is a delusion, yet never having had any estimate from a builder, they remain happy in their ignorance.

If, you will kindly call the attention of the trade to this subject, I think some of your readers will be ready to suggest a remedy for such an evil.

A BUILDER.

THE OLD GRAVE-YARDS IN LONDON.

SIR,—Many of your readers may have observed the neglected state of the disused burial places, which, once sacred when they paid, are now disregarded by clerical disseizees, disseminating disease, discontinued, disgraceful. Disrespect is heaped on the departed. Stacks of timber are the lot of some, but that is a *deal* better than what others have to bear; houses have been erected on our grandfathers' stomachs,—but will they bear up bodily against it? Another sacred resting-place is *converted* into a rubbish depository, a home for carts and barrows, refuse from fish-shops, and serves as a canine golgotha, where poor Pincher is returning to *Alma Mater.*

I verily believe the *owners* (?) of these yards would sell the clay to make bricks, if an offer were made. Take precedent from

"OLD TOBY PHILPOTT."

ROMAN PAVEMENT IN LONDON.

WITHIN the last few days a discovery has been made of a Roman tesselated pavement, in course of excavating at the corner of the Poultry, for the formation of the new street from the Mansion House to Blackfriars. The pavement lies about 17 ft. from the surface of the ground, and, as far as can be at present ascertained, is in excellent preservation. It is evidently of some extent.

Adjoining the pavement are the foundations of Roman walls, with other evidences of extensive buildings.

THE COLOURING OF ARCHITECTURAL ARTISTS.

IN examining Mr. Petit's sketches, at the Architectural Exhibition, one cannot help being struck with the great uniformity of colouring which pervades them. Whether it is a building in London, Rome, or Jerusalem that is represented, the same tints prevail. This mode of treatment, although very pleasing to the eye, gives a very unreal effect to the subjects; for what Londoner would recognise his smoke-dried St. Paul's under the garb which Mr. Petit has given it?

It is to be feared that many architectural artists are guilty of the same deception, and aim in their drawings at producing a pleasing effect rather than a true representation of the stern realities of actual building.

E. W. T.

PHOTOGRAPHIC TELL-TALE.

SIR,—I perceive in the *Builder* a suggestion for a photographic "tell-tale." In anticipation of the "smiles" which will greet its advent, let me state that I have often, in earnest fun, told, at the dinner-table, to the alarm of many present, that a contrivance was in embryo by which the whole of the proceedings of an interior might be made as plain as an illustrated book; that this would be done by a roll of sensitive paper released by clockwork, and set in some concealed spot commanding the fullest view of room or chamber, and so adjusted as to photograph every two minutes if necessary; and that, when the master returned, he could thus spread out before him all the transactions of the past time.

I claim nothing for the notion, having already been mischievously rewarded for the consternation I have occasioned, and the cries of "Shame" from some, and "What next?" from others, most seriously ejaculated.

J. G. F.

THE KUNG CHERRY.

SOME years ago Chinese seed chesnuts were introduced in a growing state by means of Wardian cases into India. Is it not possible to introduce the Kung Cherry-tree,—which perhaps may have been introduced into Russia from Thibet or Tartary by some recluse monks or anchorite,—*into this country?* Amongst the storm-swept and almost treeless Orkney, or Western Isles, even in the Island of Lewes, the division of land is marked by rows of docks, whose stems make the creels or hottes in which the poor inhabitants carry out manure. Might not such a tree, if it could be introduced, be of great practical utility and benefit, as people go far and near to see a single tree?

Elder and sycamore stand the sea-breezes: is it not possible to introduce the seeds of these also?

CIVIS LONDINENSIS.

COMPETITIONS.

Hull.—St. Silas's Church Competition.—At the last meeting of the committee, the second premium was awarded to the plans bearing the motto "Well considered." The design is by Mr. F. W. Hagen, of Hull.

Lambeth Workhouse.—The premiums for the Infirmary were awarded as stated in our last. We have now to add that the first premium for design for workhouse has been given to Messrs. A. & C. Harston, for design mentioned as "K." in our notice.

Miscellanea.

Rossini's Last Work.—There has been a great struggle for Rossini's last work, the "*Messe Solennelle.*" It is now definitely understood that this great work is secured for England, the proprietor of the copyright (for purposes of publication in England) being Mr. Thomas Chappell. Rossini's Mass will be produced by the directors of the United Opera, London, in St. James's Hall, on the 19th inst. It will be illustrated by the talents of the first vocal artistes; and the choruses will be sung by a body of choristers who are unrivalled.

Cardiff Free Library and Museum.—It is proposed by Mr. Price, the honorary secretary of this institution, to erect a new building for a Free Public Library, Museum, Gallery of Art, Schools of Science and Art, and Lecture Theatre, and to make application to the town council to appropriate to this use the piece of land in the rear of the new post-office, known as "Mr. Stockdale's Garden." The building, under the Libraries Act, would become town property, and the corporation might be asked to build a theatre, with entrance direct from the town-hall. Mr. Price estimates that the cost of the several buildings would be approximately as follows, viz.:—The schools of science and art, 1,750*l.*; gallery of art, 540*l.*; museum, 2,500*l.*; library and reference room, newspaper and magazine reading-room, 4,740*l.*; lecture theatre, 3,370*l.*,—total, 12,900*l.*

Metropolitan Tramways.—There is now a very fair prospect of improved street conveyance for large sections of the metropolis. Street tramways are likely to have a trial in London, under conditions carefully considered. The select committee of the House of Commons to which the three tramway bills were referred has accomplished its work. The bills, which will now be referred to the House of Commons, and most probably passed, provide for the establishment of three chief lines of tramway,—two on the south of the Thames and one on the north. The lines south of the Thames are one connecting Pimlico with Peckham and Greenwich, and another connecting the new thoroughfare of Southwark-street with Brixton and Clapham. The northern line is from Whitechapel Church to Stratford. In all cases the fares are fixed by the bill, and not more than 2d. is to be charged for any distance under two miles.

Metropolitan Improvements. — Southwark Park will be opened to the public by Sir John Thwaites on the 19th inst. On Friday the Metropolitan Board of Works decided to contribute 7,000*l.*, one-half of the cost of an improvement in Royal Mint-street, Whitechapel; and 1,806*l.*, one-half of the cost of an improvement to be carried out by the St. Olave's district Board of Works, by setting back the premises 60 and 61, Tooley-street.

Towns Drainage and Sewage Utilization Company.—A new company with this title has been incorporated by special Acts of Parliament, 30 & 31 Vict., c. 173, and 31 & 32 Vict., c. 175. The consulting engineers are Messrs. James Brunlees and G. B. Bruce, and the acting engineer is Mr. J. Bailey-Denton. The subject is one requiring a peculiar knowledge, which cannot be commanded without heavy expense, and which is scarcely available for small towns and local districts. Hence, says the prospectus, the necessity for some central authority on the subject, easily accessible, and possessed of the latest information;—and it is this want which the company seek to supply. It is also intended by the company to assist the local authorities of towns in disposing of their sewage with the least outlay and taxation, by acting as a medium between the sewer authorities and farmers. The company will be prepared to advise upon and to treat for the preparation of plans and the construction of works necessary for the supply of water to towns and districts at present insufficiently provided.

Fall of a House in Oxford.—Labourers in the employ of Mr. John Dover, builder, had been engaged in digging the foundation of a house about to be erected on land having a frontage to the High-street, in St. Clement's parish. The excavations were made close to a house, the foundation of which was so far undermined that the whole of the external wall, from the roof to the ground, fell. Fortunately, the men were engaged in digging the foundation of a second house adjoining, and escaped without being injured. On the previous evening the inmates of the house discovered that something was wrong, in consequence of their being unable to fasten the back door, but although the dangerous state of the outer wall became more apparent on the following day, nothing was done to shore it up and prevent it from falling. The inmates had left the house a short time when it fell.

New Indian Railway.—Operations in connexion with the survey and laying out of a new and important line of railway communication have just been commenced by a staff of British civil engineers. The line is designed to connect Carwar, on the Malabar coast, and the cotton districts of Hooblee and Dharwar, with the probability of its being carried through into the Madras Presidency. The line is to be designated "The Southern Mahratta and Mysore Railway." There will be formidable difficulties to contend with in "carrying the line up the densely-jungled ghaut," with an elevation of some 1,500 feet. The undertaking is to be carried out under the direct orders of Government. The Duke of Argyll has devolved the chief responsibility on Mr. Buchanan, C.E., London.

Building for Royal Society for Prevention of Cruelty to Animals.—The foundation stone of a new building, in course of erection for the purposes of this society, in Jermyn-street, St. James's, has been laid. A statistical record of the origin and progress of the society states that since its formation in 1824 upwards of 16,000 convictions in cases of aggravated cruelty have been obtained by means of its officers. The yearly income of the society is nearly 4,000*l.*, and the cost of the present building will be about 3,000*l.* The freehold for the site, contributed by Mr. George Wood, one of the trustees, is valued at 5,000*l.*

The South Staffordshire Industrial and Fine Arts Exhibition.—On Tuesday the South Staffordshire Industrial and Fine Arts Exhibition, Wolverhampton, was opened by Lord Granville in the hall which has been erected for the purpose in the grounds attached to Molineux House. The building, which is of iron and glass, forms a central nave 150 ft. long by 60 ft. in width, and 18 ft. high at the spring of the roof, which is semi-octagonal, and rises to a height of 45 ft. from the floor. Around the building is a Fine Arts Gallery, containing nearly 800 oil and water-colour paintings. The objects of industry exhibited are placed on the floor and outside the building. The architect and designing decorator of the Exhibition-hall was Mr. Bidlake, of Wolverhampton, and the contractors were Messrs. Clarke & Co., of the same town.

A Leper Hospital for Jerusalem.—The Marquis of Bute, says a Roman Catholic paper, in token of gratitude for his conversion, and as a thank-offering, is about founding and endowing a magnificent hospital for lepers in Jerusalem.

New Fever Hospital for Bradford.—The Board of the Bradford Infirmary have let the works for this building to the following contractors:—Excavators' and masons' work, S. Holdsworth; carpenters' and joiners' work, W. Crabtree; plumbers' and glaziers' work, J. Schofield; slaters' work, Hill & Nelson; painters' work, Brown & Pullen; the total cost being 8,500*l.* The building is arranged to accommodate forty-eight patients. The site, approaches, boundary walls, &c., are estimated to cost 4,000*l.* The architects are Messrs. Andrews, Son, & Pepper.

The late Sir Wentworth Dilke.—We record with feelings of extreme regret the death of Sir Charles Wentworth Dilke, intimately associated for many years past with International Exhibitions, the Royal Horticultural Society, and the Society of Arts. The deceased baronet has left two sons,—not one only, as stated in some of the newspapers,—namely, the present member for Chelsea, and Mr. Ashton Dilke, who had accompanied his father to St. Petersburg, where the event that many besides personal friends will deplore took place.

Memorial Hospital at Leek.—A memorial cottage hospital is about to be erected at Leek by Mrs. Alsop, as a gift to the town in memory of her late husband, Mr. James Alsop, J.P. The arrangements of the plan comprise, on the ground floor, a male ward, acute-case ward, waiting and committee rooms, kitchen, scullery, pantry, store, bath-room, and closet, with other conveniences, and a detached mortuary. On the upper floor are female ward, acute-case ward, operating-room and medical stores, nurses bedrooms and stores, bath-room, and closet. Mr. Sugden, of Leek, is the architect.

Reminiscences of Authors. — On the 6th inst. Mr. S. C. Hall, F.S.A., delivered his now famous lecture on the Authors of the First Half of this Century, in the rooms of the Society for the Encouragement of the Fine Arts, Conduit-street, to a large audience. The chair was taken by Sir Digby Wyatt, and Mr. S. C. Hall commenced by stating that having had frequent and peculiar opportunities of intimacy with the distinguished men and women of his time, he was about to give portraits of some of those whom he had known, entirely drawn from personal remembrance. He then sketched graphic and interesting accounts of Hannah More, Samuel Rogers, James Montgomery, Ebenezer Elliott, Thomas Moore, Miss Landon, Amelia Opie, Charles Lamb, Samuel Taylor Coleridge, Leigh Hunt, Professor Wilson, Hood, and many others. The lecture was vividly and impressively delivered, and was listened to with the closest attention, now and then interrupted with bursts of applause.

St. John's Church, Croydon.—The artisans engaged in restoring the parish church at Croydon, which was destroyed by fire, as our readers may remember, on the 5th of January, 1867, are making progress. An oak pulpit is in process of construction by Mr. Ruddle, of Peterborough. An alabaster font, with stone basement, reredos with centre of alabaster and sides of Caen stone, and altar-rail in oak, all from designs by Mr. G. G. Scott, are being executed by Mr. Farmer, of Westminster-road, by whom the whole of the carving of the exterior and interior of the church will be done. The prayer-desk, also from a design by Mr. Scott, will be carved and presented by Mr. Gaskin, of Croydon. Messrs. Hill, of Euston-road, are engaged in building the new organ. The peal of eight bells and a clock have been designed by Mr. E. B. Denison, Q.C. The bells are being cast by Mr. Taylor, of Loughborough, and the clock is in the hands of Messrs. Gillett & Bland, of Croydon.

Death of the York City Surveyor.—The sudden death is announced of Mr. Thomas Pickersgill, the city surveyor of York. He was seized with illness in the street, and died in a few minutes in a shop. Fatty degeneration of the heart is said to have been the cause of his death. He had on previous occasions suffered somewhat similar attacks.

Proposed New Town-hall for Lincoln.—At the meeting of the town council it has been resolved that a new town-hall is required, and a committee has been appointed to select a suitable site, and to report to a future meeting. The County Court authorities are expected to contribute 8,000*l.* or 9,000*l.*, and Mr. Alderman Brogden proposes that the Corporation should add 8,000*l*, and give the site, valued at 4,000*l.*

The Brighton Drainage.—At the last week's meeting of the town council, the Works Committee reported the receipt of the following tenders for the construction of a tubular iron outfall near the western boundary of the borough. The surveyor's estimate was 7,000*l.* From Mr. J. Phillips, London, 6,490*l.*; Messrs. G. Cheesman & Co., Brighton, 8,400*l*; J. Harris & Son, Rotherhithe, 6,943*l.* 10*s.*; W. Webster, London, 9,900*l.*; J. Kirk, Woolwich, 5,324*l.*; T. Middleton & Co., Lindfield, 6,749*l.*; and Dickenson & Oliver, 8,500*l.* The committee recommended the acceptance of the tender of Mr. Kirk, and approved of his sureties. The proceedings were confirmed. The Borough Surveyor (Mr. Lockwood) then reported upon the appointment of a Clerk of the Works to superintend the new groyne and storm outlet opposite the Junction-road; and the Works Committee appointed Mr. Charles D. Rickards at a salary of 2*l.* 10*s.* per week.

Family Monument to the late Bishop Lonsdale.—A monument has just been erected in Eccleshall churchyard, over the grave of Bishop Lonsdale, by the members of his family. The monument is in the form of a memorial cross, of early architecture. It rests on an octagon base of grey Aberdeen granite, rising two steps, and measuring 8 ft. 4 in. across. In the centre of this base is fixed a square block of the same material, with the sides sloped away from the top. Out of this block or plinth springs the shaft of the cross, the upper limbs of which are connected by a circle. With the exception of the octagon base, which is tooled down smooth and level, the whole of the monument is highly polished. The dark blue colour of the polished granite contrasts with the light grey tint of the unpolished base. The monument measures about 11 ft. 6 in. in height. The stone was wrought, polished, and engraved at Messrs. Fraser's Granite Works, Aberdeen, under the direction of the contractors, Messrs. Bevers, of Southwark. Mr. Gilbert Scott designed the memorial.

The Thames Embankment.—Most readers are aware that the Metropolitan District Railway Company, which obtained powers to make a line under the Embankment, have failed to carry out their powers up to the present moment, and have thus delayed, and are still delaying, its completion. This has involved a great expense on the Board of Works, and thus, of course, on those who provide the money; but the worst loss has not yet been reached, and there is great probability, not only of the final opening of the Embankment being delayed, but of a further outlay falling upon the ratepayers. A large staff of officials has been retained and paid which would have been dispensed with but for the delay. The public are also losing the interest on about two millions of money expended on the Embankment, which is lying idle, and has been (through the delay of the railway company) lying idle for two years. Moreover, the 200,000*l.* which the company was bound to pay to the Metropolitan Board for the privilege of making the railway in the Embankment has not been paid.

Memorial of the Slingsby Hunting Accident.—A monument is to be erected in York Minster to the memory of Sir Charles Slingsby and of those others who lost their lives in a late hunting accident. Hitherto there have been two proposals; an obelisk at Newby or a memorial bridge over the Ure on the site of the present ferry. The committee of subscribers have, however, determined in favour of a cenotaph in the Minster.

Monument to Dr. Whewell. — The Master and Fellows of Trinity College, Cambridge, have just decided to entrust to Mr. Woolner the execution of a monument to Dr. Whewell, which is to be placed in the ante-chapel of the college.

Exmouth.—The new docks have been thrown open to the public. The works were commenced in 1865 by a company with a capital of 60,000*l.* A new market, built at a cost of 6,000*l.*, and a new hotel, which cost 8,000*l.*, have also been opened. The principal improvements have been carried out by the Hon. Mark Rolle.

Rotherham. — Mr. George Jennings, late Assistant Surveyor to the Rotherham Board of Health, has been appointed to the offices of Surveyor and Inspector of Nuisances to the Rotherham and Kimberworth Local Board of Health, rendered vacant by the resignation of Mr. J. H. Jaggar.

To Remove Old Putty.—Many persons destroy their window sash endeavouring to remove old putty. This may be obviated by applying a hot poker to the putty, which will then readily yield to the knife and leave the sash clean. Care must be taken not to touch the glass with the poker, nor even to let it stop too near it.

Query.—One of the "Things not generally known," is that steam will, by direct impact, ignite dry wood or other inflammable substances. The "Scientific American" mentions a case in which a portion of dry pine was lighted by steam from a boiler 12 ft. off!

The Sewage at Barking.—Matters are looking serious at the northern outfall, as we have more than once expressed fears would be the case. Mr. Robert Rawlinson, C.B., has been directed by the Home Office to examine into and report on the circumstances.

To Stop a Leak.—Beat yellow soap and whitening, with a little water, into a thick paste. Rub this over the part where the leakage is, and it will be instantly stopped.

TENDERS.

For four cottages, Uttoxeter-road, Derby, for Mr. W. Halliday. Messrs. Thompson & Young, architects:—

Bridgart	£820 0 0
Craddock	811 18 1
Riley (accepted)	782 9 8

For works, in Derbyshire, for the Right Hon. the Lord Vernon:—

S. De Ville (accepted)	£560 0 0

For erecting the New Prince Alfred public-house, London-street, Greenwich, for Mr. Hodges. Mr. J. Dudley, architect:—

Morgan	£2,188 10 0
Windows	2,082 0 0
Bamford	2,040 0 0
Disney	2,000 0 0
Sabey	1,999 0 0
Pearson	1,990 0 0
Saywell	1,958 0 0
Turner & Sons	1,765 0 0

For building a house, at Burnham, near Barton-on-Humber, in the county of Lincoln, on the estate of the Right Hon. the Earl of Yarborough. R. G. Smith, architect. Quantities supplied by Messrs. Rake & Ranwell:—

Barritt	£2,671 0 0
Jackson	2,574 0 0
Hutchinson & Son	2,400 0 0
Bilton	2,328 0 0
Stamp	2,234 0 0
Clarkson	2,212 0 0

For the erection of a hotel at Finchley. Mr. F. Lett, architect. Quantities supplied by Mr. C. Poland:—

Wheeler	£1,847 0 0
Henshaw	1,779 0 0
Sharpington & Cole	1,655 0 0
Cooper & Cullum	1,550 0 0
King & Sons	1,540 0 0

For the erection of a new dwelling-house at Farncombe, Surrey. Mr. H. Peak, architect. Quantities supplied:—

	With 26oz. Sheet.	With Plate Glass.
Mitchell	£1,310 0 0 ...	£1,328 0 0
Moor & Son	1,300 0 0 ...	1,327 0 0
Duke	1,270 0 0 ...	1,300 0 0
Loe	1,223 0 0 ...	1,251 0 0
Nye	1,212 17 4 ...	1,231 7 4
Goddard & Son*	1,173 0 0 ...	1,190 10 0

* Accepted.

For alterations to the Crown Tavern, Clerkenwell-green, for Mr. Maples. Mr. W. Nunn, architect:—

Hyde (accepted)	£2,050 0 0

For alterations and additions to a mansion at Wandsworth. Mr. H. Ford, architect:—

Easton Brothers	£5,577 0 0
Dove Brothers	4,567 0 0
Henshaw	4,317 0 0
Gammon & Sons	4,239 0 0
Cooper	4,106 0 0
Conder	3,877 0 0
Scrivener & White	3,751 0 0
Kilby	3,675 0 0
Aviss & Co.	3,656 0 0
Adamson & Sons	3,620 0 0
Tongue	3,500 0 0
Crabb & Vaughan	3,426 0 0

For the erection of a school at Hanwell. Mr. C. J. Jones. Quantities supplied by Messrs. Richardson & Waghorn:—

Tyrell	£720 0 0
Dusgate	700 0 0
Nye	700 0 0
Adamson	687 0 0
Hansom	675 0 0
Gibson Brothers	650 0 0

For erection of shop and dwelling-house in Duke-street, Brighton, for Mr. Sendall. Messrs. Goulty & Gibbins, architects. Quantities supplied:—

Dancy	£1,240 0 0
Garrett	1,240 0 0
Cheesman & Co.	1,205 0 0
Lockyer	1,195 14 0
Patching & Son	1,120 0 0
Dean & Dickenson	1,063 0 0
Salter	1,058 0 0

For alterations to house at Crown-hill, Lower Norwood, for Mr. Josiah Temple. Messrs. Goulty & Gibbons, architects:—

Deacon	£415 0 0
Boyer & Son	396 0 0
Wards (accepted)	370 0 0

For erection of stables, &c., at Palmeria-mews, Hove, Brighton, for Mr. George Vaughan. Messrs. Goulty & Gibbins, architects:—

Levett	£796 0 0
Cheesman & Co.	759 0 0
Nash & Co.	709 0 0
Lockyer	696 0 0

For the erection of two shops on forecourts of Nos. 272 & 274, Euston-road. Mr. W. A. Baker, architect. Quantities supplied by Messrs. Richardson & Waghorn:—

Stephens & Watson	£690 0 0
Bird	650 0 0
Hatchman	590 0 0
Grover	585 0 0
Tarrant (accepted)	555 0 0

For the erection of a workshop in Southampton-mews, Euston-road, for Mr. Hughes:—

Abbott	£583 0 0
Cooper & Cullum	557 0 0
Roberts	545 0 0
Eaton & Chapman	530 0 0
Kelly Brothers	523 0 0
Blott & Co. (accepted)	519 0 0

For a tower and spire at Forest-hill, Surrey. Mr. E. Christian, architect. Quantities supplied by Messrs. Goodman & Pinall:—

Hutchinson	£4,595 0 0
Wells	4,340 0 0
Wright	3,495 0 0
Mundy	2,978 0 0

For house and schools, York-road, Battersea. Mr. C. A. Buckler, architect:—

Nightingale (accepted)	£4,736 0 0

For a memorial to be erected in the City of London Cemetery, over the remains of persons buried in the church of St. Mary Somerset, Thames-street, and recently removed. Messrs. Haywood & Blashill, architects:—

Farmer & Brindley	£320 0 0
Dunkley & Co.	290 15 0
Druitt (accepted)	275 0 0

For three shops at Beckenham, Kent. Messrs. Haywood & Blashill, architects. Quantities supplied by Mr. D. Cubitt Nicholls:—

Breeze & Emmett	£2,631 0 0
Ennor	2,097 0 0
Beeton	2,000 0 0
Hill, Keddell, & Waldram	1,998 0 0
Colls & Son	1,978 0 0
Gammon	1,951 0 0
King & Son	1,940 0 0
Tully (accepted)	1,875 0 0

For alterations to No. 59, Mortimer-street, for Mr. P. Robinson:—

Saunders	£525 0 0
Ditto, revised (accepted)	372 0 0

For re-building premises, No. 65, Tottenham Court-road, for Messrs. Waugh & Son. Mr. J. Dent, architect. Quantities supplied by Messrs. Richardson & Waghorn:—

	New Premises.	For old Materials.
I'Anson	£1,437 0 0 ...	£25 0 0
Wagstaff	1,430 0 0 ...	50 0 0
Simpson	1,389 0 0 ...	10 0 0
Keeble	1,323 0 0 ...	35 0 0
Conder	1,287 0 0 ...	5 0 0
Eaton & Chapman	1,293 0 0 ...	40 0 0

For farm buildings at Malmain's Farm, Alkham, near Dover, for Mr. W. F. Trott. Mr. J. H. Andrews, architect:—

Miller	£1,323 0 0
Sampson	1,233 0 0
Richardson	1,140 0 0
Harnett	1,069 0 0
Bushell	1,062 0 0
Adcock (accepted)	1,648 0 0

TO CORRESPONDENTS.

H. G.—J.—H.—A. & C. H.—E. F.—G. W.—B. B.—J.T. M.—W.—J. P.—J. D. P.—J. F. B.—W. S.—A. J.—H. P.—K.—W. S.—T. M. R.—B. W.—W. R.—F. A. B.—H. & Co.—F. W. H.—J. B.—C. C. H.—Law Society.—M. P.—P. & R. (in due course).—H. B. (we give no currency to inuendoes).—Mr. C. (received too late).—W. O'B. (shall appear.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

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On Thursday next.—Acton, Middlesex.—Valuable Freehold Residential and Building Estate.
MR. ROBINS has been favoured with directions from the Trustees under the will of the late Edward Buxton, esq. to SELL by AUCTION, at the MART, Tokenhouse-yard, E.C. on THURSDAY, MAY 20th, at TWO precisely, in Two Lots, the highly valuable and important FREEHOLD ESTATE, known as Mill Hill Park, situate near to the Acton Station, on the North and South Western Junction Railway, and about a mile from the Acton Station, on the Great Western Railway. The estate comprises, briefly, a residence, containing ample accommodation for a family, surrounded by pleasure grounds, and a park, comprising altogether 21a. 1r. 8p. the greater part of which is eligible for building.—Particulars, with plan, may be had of Messrs. SHEPHEARD & SON, Solicitors, 78, Coleman-street, E.C.; and 12, Lower Phillimore-place, Kensington, W.; at the Mart; and of Mr. ROBINS, 5, Waterloo-place, Pall-mall, S.W.

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TO SURVEYORS.—The Sheerness Local Board of Health will be ready, on THURSDAY, the 20th day of MAY, 1869, to receive APPLICATIONS from Persons willing to undertake the joint duties of SURVEYOR and INSPECTOR of NUISANCES to the said Board, from the 27th May, 1869. The Officer to be appointed will be paid a salary of 130l. per annum, payable quarterly, and will have the use of the house near the Waterworks, now occupied by the present Surveyor, free from rent and taxes, and will be required to reside there. He will be required to perform all duties of a Town and District Surveyor and Inspector of Nuisances, and his whole time must be devoted to the business of the Board. Applicants will not be expected to attend unless written to. Applications are to be delivered at the Office of the Board, Trinity-road, Sheerness, on or before THURSDAY, the 20th day of MAY, 1869, and not later than SIX o'clock in the evening of that day.—By order of the Sheerness Local Board of Health.
EDWARD FELKIN, Clerk.
Office of the Local Board of Health, Trinity-road, Sheerness, 6th May, 1869.

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